Section 3 Historic Background

This historic background review for the Airport Section 3 study area is largely drawn from the AISP (Hammatt and Shideler 2011, Section 3: 22-53). Additional historical information from other recent studies appears in Appendix A. Also transcripts and photocopies of Land Commission Awards (LCAs) data for the vicinity of the Airport Section 3 study area appear in Appendix B.

3.1 Hālawa Ahupua‘a

3.1.1 Early Historic Period

Captain Cook first sighted O‘ahu on January 18, 1778 but did not make a landing. Shortly after the death of Captain Cook, O‘ahu had its first contact with foreigners when *HMS Resolution* and *HMS Discovery* landed at Waimea Bay on February 27, 1779. It was not until 1786 that the next contact with foreign ships was made when *HMS King George* under Captain Portlock and *HMS Queen Charlotte* under Captain Dixon touched at Wai‘alae Bay for four days to take on provisions (Portlock 1789:69-76).

Our first details about Hawaiian settlement in Hālawa come from explorers’ accounts and maps such as Otto von Kotzebue’s O‘ahu map of 1817 (Figure 8). While this early survey map should be understood as rather schematic, it indicates the general pattern of coastal residence and agriculture. A quilt of ponded fields of taro (*lo‘i kalo*) and fairly dense associated habitations extend west from the western edge of the Airport Section 3 study area. This dense pattern of occupation began in the immediate vicinity of the mouth of Hālawa Stream and extended westward along the margins of Pearl Harbor with its abundant marine resources, relatively fertile soils, and numerous streams. In contrast is the relative lack of habitation and agriculture along the majority of the Airport Section 3 corridor. The post-erosional volcanic land forms of Makalapa, Āliamanu Crater, and Salt Lake (Āliapa‘akai) Crater effectively pushed Hālawa Stream to the northwest and Moanalua Stream to the southeast, leaving most of the Airport Section 3 corridor without surface water. Traditional patterns of life focused further inland where rainfall was higher and adjacent to the main trail from Kona to ‘Ewa (see Figure 7).

The population of the islands of Hawai‘i at Contact has been conservatively estimated to be between 100,000 on the low end, and up to 400,000 (Schmitt 1977), but some recent estimates of population have been as high as 800,000-1,000,000 (Stannard 1989, Kame‘eleihiwa 1992). In the 1820s, both William Ellis and C. S. Stewart estimate the population of O‘ahu to be about 20,000 (Ellis 1969:19; Stewart 1970:26). It is not clear how they arrived at these figures. Ellis writes the following about the Hawaiian population:

> Compared with those of other islands, the inhabitants may be termed numerous. They were estimated by their discoverers at 400,000. There is reason to believe this was somewhat above the actual population at that time, though traces of deserted villages and numerous enclosures, formerly cultivated but now abandoned, are everywhere to be met with. At present it does not exceed 130,000 or 150,000 [for the Hawaiian Islands collectively], of which 85,000 inhabit the island of Hawai‘i. (Ellis 1969:23)

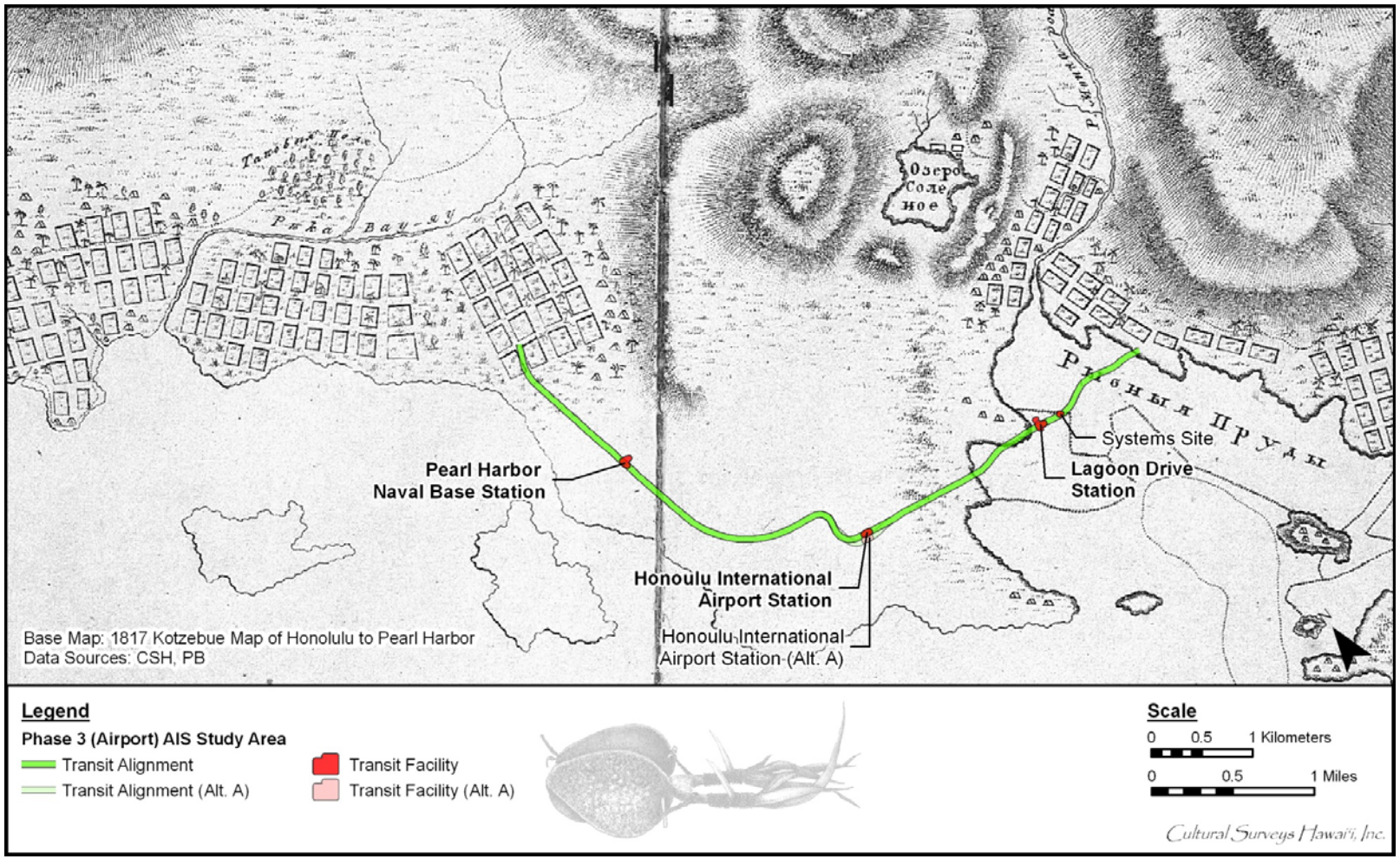

Figure 8. Otto von Kotzebue map of 1817 identifies Salt Lake ("*Озеро Соленое"*), Mauna-Roa (Moanalua) River ("*P. Моина-роа*"), and fish ponds ("*Рыбныя Прудыя*") along the shoreline of Moanaluam Ahupua‘a; also note an abundance of *lo‘i kalo* (irrigated taro fields) in the lowlands of Moanalua east of Āliapa‘akai (Salt Lake), spreading out from Moanalua Stream and from the fishponds at the former shore (although this early survey is a general schematic; the relative lack of habitation along the Airport Section 3 corridor is noteworthy)

Sometime after Kamehameha conquered O‘ahu in the battle of Nu‘uanu in 1795, he gave his most trusted foreign advisors, Isaac Davis and John Young, some lands as a reward for their loyal service to him. As part of this award, each one received half of the *ahupua‘a* of Hālawa. As was the usual custom at the time, the king divided the land among his chiefs who supported him throughout his conquests of the islands (Klieger 1995:31, 36).

The missionaries are credited with the taking of the first census in 1831-32. However, there was no uniformity among the different stations and the census totals cover fairly large geographical areas. In addition, information was not necessarily broken down into smaller *ahupua‘a* and no distinctions were made among sex, age, birth, and death rates (Schmitt 1973:1).

The 1831-32 census for O‘ahu was 29,755, with Honolulu being the most heavily concentrated area with 13,344 people. The ‘Ewa district was the third largest with a count of 4,015 (Schmitt 1977:8-9). In this census, Hālawa was combined with ‘Aiea. The census shows there were 163 males, 134 females, 72 male children and 35 female children; with a total count of 404 for the two *ahupua‘a* (Schmitt 1977:19). The reasonable inference is that these ahupua‘a were fairly well-populated but not densely populated in comparison to the other *ahupua‘a* of ‘Ewa at the time.

There are no separate population figures given for Hālawa until the 1835-36 census. At that time, there were 104 males, 102 females, 48 male children, 29 female children; with a total count of 283 for the *ahupua‘a*. The total for ‘Ewa was 3,423; a decrease of 592 (seemingly a decline of 14.7% over 4 years) from the first census figures.

In 1839, for the purposes of tax assessment, a law was passed to take an official government census which was to be carried out by the tax officers in the various districts. This was to have been done in 1840, but was not actually carried out. In 1846, a new law was enacted giving the responsibility of the computations to school officials. A count was undertaken in 1849, however, the results are suspected to be under reported. It was not until 1850 that a more systematic and accurate census was conducted (Schmitt 1977:3).

These lesser chiefs (Young and Davis) were allowed to work the land as long as they lived. But, as was the traditional custom, upon their death the land reverted back to the *ali‘i nui* or paramount chief. This rule held true even for these two most faithful advisors. John Young tried to make his lands inheritable by requesting that his children, and those of Isaac Davis whom he adopted, be allowed to retain the lands given to him by the king upon his death. Specifically, he attempted to will Hālawa to his daughter, Grace Kama‘iku‘i. His will states:

> . . . in behalf of my deceased friend Isaac Davis and for his children as he died without will, the King Kamehameha gave me all the said Isaac Davises [Davis’] lands to take care of them and his children until the children came of age, and now they are come of age so I think it right to leave my last wishes and will that the King, Ka‘ahumanu, Adams and Rooke and all the Chiefs will let Isaac Davises children keep their father’s lands that King Kamehameha gave to him as a reward for assisting the King in his wars in conquering the islands of Hawai‘i, Maui, Molokai, and O‘ahu, and which we have an undoubted right to leave to our children, which I hope in God our young king will fulfill the wishes of his honored father. My own lands, I wish my children to enjoy as I have done, likewise my wife . . . (Claim: #595 F.R. 67-72 V2).

Kamehameha III refused to honor Young’s request upon his death (Kame‘eleihiwa 1992:59-60). However, in the Māhele, John Young’s children were allowed to keep lands as *‘āina ho‘olina* or inherited lands. Lilikalā Kame‘eleihiwa (1992:59-60) notes that in all of the *Buke Māhele*, these were the only lands given under this designation.

3.1.2 The Māhele

The Organic Acts of 1845 and 1846 initiated the process of the Māhele – the division of Hawaiian lands – which introduced private property into Hawaiian society. In 1848, the crown and the *ali‘i* (royalty) received their land titles. *Kuleana* awards for individual parcels within the *ahupua‘a* were subsequently granted beginning in 1850. These awards were presented to tenants – native Hawaiians, naturalized foreigners, non-Hawaiians born in the islands, or long-term resident foreigners who could prove occupancy on the parcels before 1845. The *kuleana* LCA for for Hālawa Ahupua‘a are described in Table 3.

It is clear that circa 1850 there was a relatively tight focus of Hālawa Ahupua‘a settlement and agriculture a little more than a kilometer upstream of where the present study corridor crosses Hālawa Stream (Figure 9 and Figure 10). This likely was a general pattern extending back in time for centuries with Hālawa habitation focused well inland. All of the land claims were inland of the present Airport Section 3 study area. There were no *kuleana* LCA claims on the coastal plains of Hālawa Ahupua‘a except in the immediate vicinity of Hālawa Stream. However, it should be noted that an unnamed settlement, annotated as “Settlement 1840” on an Anderson and Bouthillier (1996) map (see Figure 18) just southwest of the area that would become known as Watertown in the Pearl Harbor entrance attests to settlement also being present near the coast along the margins of the Pearl Harbor entrance and the East Loch of Pearl Harbor.

The only two Hālawa Ahupua‘a claims were associated with Land Commission Awards 2131 and 2043. Kanihoali‘i, and his heir Kaukiwaa were claimants for LCA No. 2131 (see Appendix B). LCA No. 2131 consisted of two distinct pieces: a *lo‘i kalo* and *kula* adjoining in the *‘ili* of Kamau and 2d, a fish pond on the sea shore which is a *lihi ‘āina* of the said *‘ili ‘āina* Kamau. It appears it was the Pu‘uone Kalokoloa fishpond parcel of LCA No. 2131 that abutted the east side of the north end of the present study area, just northeast of Hālawa Stream (see Figure 9 and Figure 10) and that the *lo‘i* and *kula* claim was 1,400 m inland in Kamau ‘Ili near Moanalua Road (see Figure 9).

Kawaha was the claimant to LCA 2043 (see Appendix B for more details) that included a fish pond that Klieger (1995:61) located on the southwest side of the mouth of Hālawa Stream just inland of the Airport Section 3 corridor and associates with the name “Pu‘uone Kaulaloa” (see Figure 9).

Oliver Holmes passed away in 1825. If he had indeed received Isaac Davis’ Hālawa lands, they were probably returned to Liholiho (Kamehameha II) who redistributed them after Holmes’ death. Holmes’ children did not claim any Hālawa lands in the Māhele, although his son, George Holmes was awarded a piece of land in Honolulu (LCA 1045). It is this period from 1825 to 1848 that is most unclear. Subsequently, Kekūanaō‘a ended up with Davis’ Hālawa portion at the end of the Māhele and Grace Kama‘iku‘i Young Rooke (John Young’s daughter) retained the John Young portion. Isaac Davis’ portion of Hālawa passed from Kekūanaō‘a to Ruth Ke‘elekōlani and on to Bernice Pauahi Bishop. Upon Ruth’s death, her lands became part of the Bishop Estate Trust (Klieger 1995:38-40, 44, 46).

Table 3. *Kuleana* Land Commission Awards for Hālawa and Kalihi Ahupua‘a (adapted from Klieger 1995:63)

LCA #	Claimant	General Location	Assoc. Place Names	Land Use
1983*	Hapule (Kapule)	N. of Hālawa Stream, just *mauka* of corridor	Kawahanaenae Mo‘o‘āina Kawahanaenae ‘Ili	eight *lo‘i*, one *kula*, house, one *pu‘uone* (seven *lo‘i*, one *kula*)
1996	Naea	N. of Hālawa Stream, km. *mauka* of corridor	Kulina Mo‘o‘āina, Kulina (Kulena) ‘Ili	three *lo‘i*, house (*kula*)
2016	Makakane	N. of Hālawa Stream, km. *mauka* of corridor	(Kamalanai ‘Ili)	two *lo‘i*, one *kula*
2042	Kauohilo	N. of Hālawa Stream, km. *mauka* of corridor	Keaupuni Mo‘o‘āina, Kula, Keaupuni‘Ili	three *lo‘i* (three *lo‘i*, one *kula)*
2043	Kawaha	N. of Hālawa Stream, km. *mauka* of corridor- but Loko Kunana claim was west of Hālawa Stream	Kunana Mo‘o‘āina and Kaulailoa Pu‘uone, Kunana (Kaunana) ‘Ili	three *lo‘i*, one *kula,* one pond (four *lo‘i*, one *kula,* one pond)
2044	Kaupali	N. of Hālawa Stream, km. *mauka* of corridor	Pamuku Mo‘o‘āina, (Pamuku ‘Ili)	four *lo‘i* (four *lo‘i*, one *kula)*
2047	Kekio	N. of Hālawa Stream, km. *mauka* of corridor	Kaihuamo‘o Mo‘o‘āina and Kula, Kaehuamo‘o or Kaihuamo‘o ‘Ili	1.5 *lo‘i*, one *kula*, house
2048	Kauhalu	N. of Hālawa Stream, km. *mauka* of corridor	Palahalaha Mo‘o‘āina, Kunana ‘Ili	four *lo‘i*, one *kula*, house (five *lo‘i*, two *kula)*
2055	Kahawai-olaa	N. of Hālawa Stream, km. *mauka* of corridor	Kahaia Mo‘o‘āina, Kunana (Kahaia) ‘Ili	six *lo‘i* (six *lo‘i*, two *kula)*
2057	Keawe (1)	N. of Hālawa Stream, km. *mauka* of corridor	Pamuku Mo‘o‘āina, Kunana ‘Ili	four *lo‘i*, one houselot (four *lo‘i*, two *kula*)
2059 n/a	Kaninauali‘i	?	-	[dead in 1846]
2091 n/a	Kelohanui	?	-	six+ *lo‘i*, one *kula*, one houselot
2096	Kenui	N. of Hālawa Stream, km. *mauka* of corridor	Kuaimano Mo‘o‘āina, Kulina (Kuaimano) ‘Ili	four *lo‘i*, one *kula*, house

LCA #	Claimant	General Location	Assoc. Place Names	Land Use
2131*	Kanihoali‘i	N. of Hālawa Stream, just *mauka* of corridor and N. of Hālawa Stream, 1 km. *mauka*	Kalokoloa Pu‘uone, Kamau ‘Ili	one *lo‘i*, two *pu‘uone*, one *kula*, one houselot
2137	Keawe (2)	N. of Hālawa Stream, km. *mauka* of corridor	Kamo‘oiki Mo‘o‘āina and houselot, (Kamo‘oiki) ‘Ili	two *lo‘i*, one houselot (three *lo‘i*, one *kula*)
2139	Kinilau	N. of Hālawa Stream, km. *mauka* of corridor	Hanakapua‘a Mo‘o‘āina, Kulina ‘Ili	four *lo‘i*, one *kula*, house (three *lo‘i*, one *kula*)
2155	Pua‘ali‘ili‘i	S. of Hālawa Stream, km. *mauka* of corridor	Kalo‘iiki ‘Ili	8.3 *lo‘i*, one *kula (*nine *lo‘i*, one *kula)*
2156	Opunui	S. of Hālawa Stream, km. *mauka* of corridor	Konohikilehulehu Mo‘o‘āina and Piomoewai Kula and houselot, Kalo‘iiki ‘Ili	3.3 *lo‘i*, one *kula* one houselot *(*four *lo‘i* one houselot)
2157	Kanakaoaki	N. of Hālawa Stream, km. *mauka* of corridor	Kulina ‘Ili Kia ‘Ili	four *lo‘i*, six *lo‘i* one *kula*
9330 n/a	Ka‘auku‘u	?	Muliwai (Makali‘i) ‘Ili	one *kula* (entire *‘ili*)
9331 n/a	Pulao	?	Muliwai Mo‘o‘āina, Muliwai ‘Ili	one *lo‘i*
9332	Kaheana	N. of Hālawa Stream, just *mauka* of corridor	Kaihuamo‘o Mo‘o‘āina, Kulina ‘Ili	two *lo‘i*, one *kula* (1/2 *lo‘i*)
9332B*	Kealohanui	N. of Hālawa Stream, km. *mauka* of corridor	Kumu‘ula Mo‘o‘āina, Kia (Kumu‘ula) ‘Ili	four *lo‘i*
9332C n/a	Kekoanui	?	Peahinaia ‘Ili	one *lo‘i*
10498*	Nahinu	Kalihi Ahupua‘a	-	Six *pō‘alima* [land worked for the *ali‘i*] *kalo* patches and one pasture.
818*	George Beckley	Kalihi Ahupua‘a	Kaliheawa	One farm with the fishing grounds

* Denotes LCA is shown on Figure 10 map; n/a denotes not awarded; and ? denotes no information provided

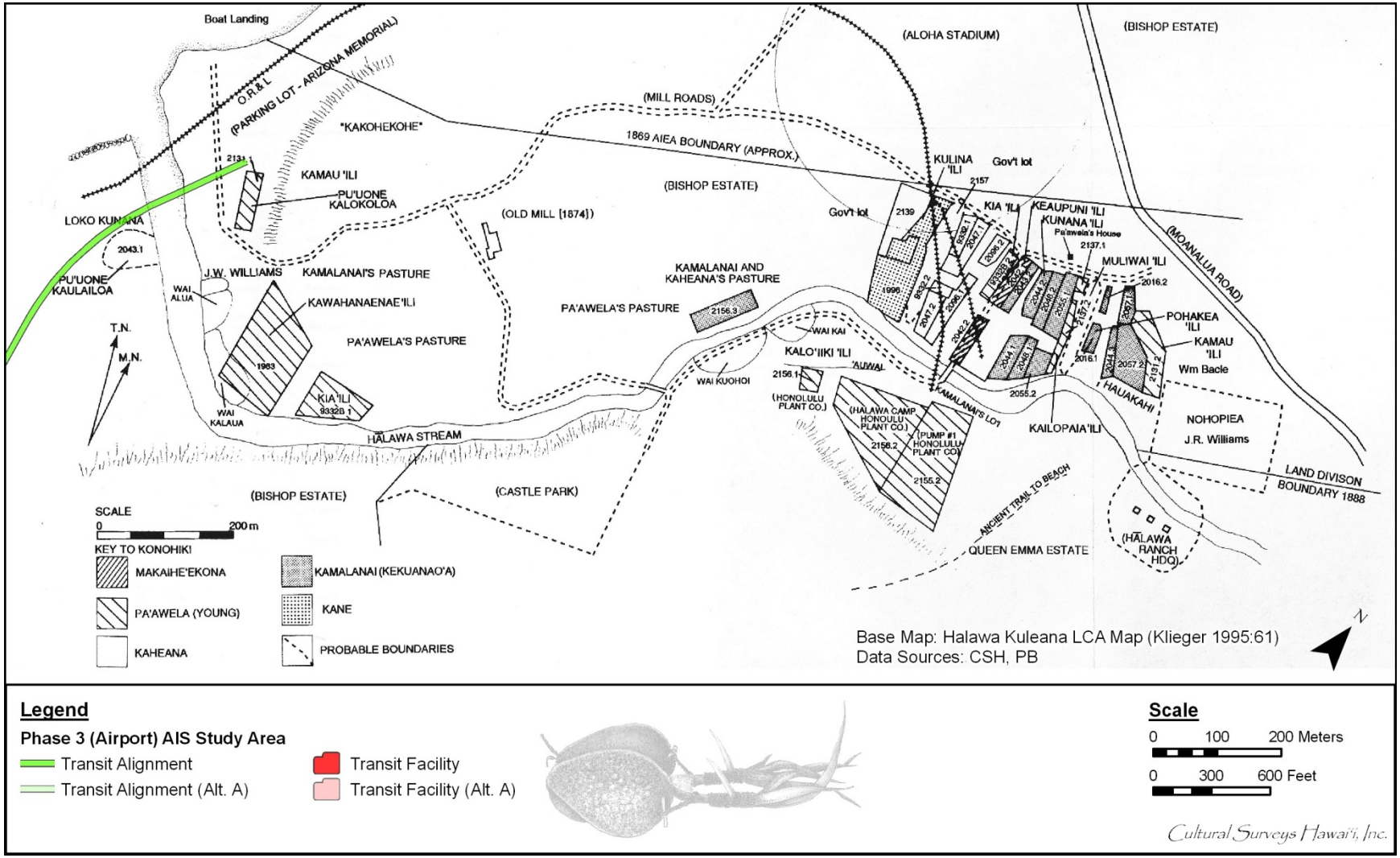

Figure 9. *Kuleana* Land Commission Awards along lower Hālawa Stream (adapted from Klieger 1995:61) including locations of Pu‘uone Kalokoloa Fishpond (LCA 2131) near the north end of the Airport Section 3 corridor (Note: LCA shapes were often simplified into quadrilaterals during surveying)

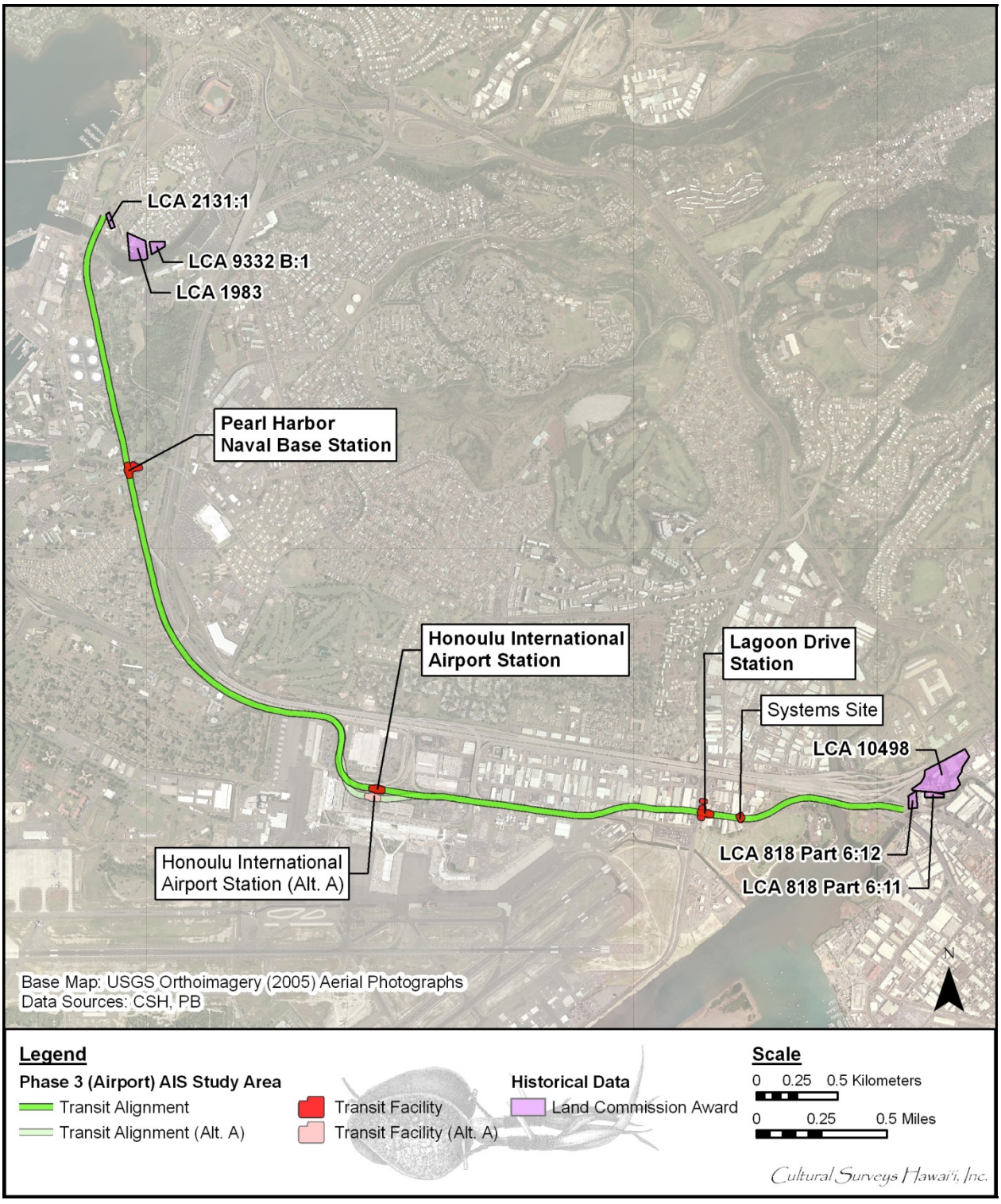

Figure 10. Overlay of *Kuleana* Land Commission Awards near the Airport Section 3 study area in Hālawa Ahupua‘a on 2005 USGS Aerial photograph (the LCAs at upper left are in Hālawa Ahupua‘a and the LCAs at the lower right are in Kalihi Ahupua‘a)

In 1848, Hālawa Ahupua‘a was awarded jointly to Grace Kama‘iku‘i Young Rooke and Kekūanaō‘a (LCA #s 8516B and 7712) (Klieger 1995:41).

In 1852, Kekūanaō‘a wrote a letter to the Minister of Interior requesting that a list of the *kapu* (forbidden) fish for Victoria Kamāmalu’s lands on O‘ahu be published in the newspaper. The *kapu* fish for Hālawa was the *‘anae* or full-sized mullet (Kekūanaō‘a, 1852: August 12).

In 1862 the Mataio Kekūanaō‘a and Kama‘iku‘i Rooke (John Young’s daughter) leased a portion of the *ahupua‘a* of Hālawa to a Manuel Paiko of Honolulu for the purpose of cattle ranching (Bureau of Land Conveyance 1862, Liber 9:174-179).

In 1866, Kama‘iku‘i willed to her sister, Fanny Na‘ea, her interest in her portion of Hālawa (Klieger 1995:40).

In 1879, Fanny gave her interest of Hālawa to her daughter, Emma Kaleleonālani Na‘ea Rooke, Queen of Kamehameha IV, by way of a deed (Klieger 1995:48), which stated:

> . . . the undivided ½ interest of and in to the Ahupua‘a of Hālawa situate in ‘Ewa, Island of O‘ahu, and more fully described in Royal Patent 6717 to Grace Kamaikui and being the same premises devised to me the said Fanny Young Kaleleonalani by the said Grace Kamikui. (Bureau of Land Conveyance 1879, Liber 59:285)

Fanny died one year later in 1880. A listing of *konohiki* (“Headman of an *ahupua‘a* land division under the chief” – Pukui and Elbert 1986:153) lands on the island of O‘ahu reflects the joint tenancy of Hālawa. Both Ruth Ke‘elikōlani and Queen Emma are listed as owners. The document also lists the lands on O‘ahu that abut the ocean, including the length and whether the land is a lagoon, reef or open sea. The length of the land abutting the sea at Hālawa is 8.52 miles and it is listed as being a reef and a lagoon (Interior Department Letters 1878-1879). Five years later, Queen Emma died in 1885, leaving no heirs. All of her lands became part of the Queen Emma Trust (Klieger 1995:48-49).

Between 1848 and 1888 there seems to have been dispute over the joint tenancy of Hālawa between the families of Kekūanaō‘a and Young (Klieger 1995:43). In 1888, after a new survey was completed, Sanford B. Dole settled the matter by giving the northern portion of Hālawa to the Bishop Estate and the southern portion, including the current study area to the Queen Emma Trust (see “Queen Emma Estate” on Figure 12) (Klieger 1995:50). From this time on, the boundaries have been distinct and the two portions recognized independently of each other.

3.1.3 Mid- to late-1800s

From early visitor descriptions of Hālawa and ‘Ewa, one can already begin to see that by the 1820s the demographics and landscape had changed considerably. Where once the area was heavily populated and highly productive, by the 1820s to population had dwindled and there were fewer villages and areas under cultivation.

By 1850, three years after the Māhele, the census for O‘ahu was 25,440, a decline of 14.5% over eighteen years. This population decline has been attributed to several factors including disease, high infant mortality, and low fertility rates due to sexually transmitted diseases (Schmitt 1973:15). The decline also is probably due to people moving away from rural areas and closer to Kou (Honolulu), which was the center of trade and economic activity. On the island of

O‘ahu, a decrease in the population statistics is seen almost yearly until 1884, when the figures show an increase from then on into the twentieth century (Schmitt 1977:11). The increase is probably related in part to the growth of the sugar industry and the imported labor that was needed to work the plantations.

The first Chinese laborers arrived in Hawai‘i in 1852 under contract to work on sugar plantations. As the demand for *kalo* declined and importation of Chinese laborers to the west coast of California and Hawai‘i increased, a market for rice developed. *Lo‘i* lands were ideal for growing rice, and as these lands lay in disuse and became more available, the Chinese farmers snatched them up. Most of the land was “near sea level--undrained areas at the mouths of streams: lowlands, which could be reclaimed without great expense” (Coulter and Chun 1937:11). The Royal Hawaiian Agricultural Society encouraged rice as a new crop. The first rice harvest occurred in 1862. By the mid-1860s, much of the *lo‘i* on O‘ahu had been transformed into rice fields. By 1892, there were about 117 acres of land planted in rice in the lowlands of Hālawa (Coulter and Chun 1937:21).

In many *ahupua‘a*, the lands that were not claimed by *kuleana* claimants were leased out to entrepreneurs who started ranching and sugar plantations on a large scale (Klieger 1995:71). Such was the case with Hālawa. In 1862, Kama‘iku‘i Rooke and Mataio Kekūanaō‘a leased much of Hālawa (including the current study area) to a Manuel Paiko, a Portuguese rancher (Klieger 1995:76). The lease document reads that the boundaries begin at “a small brook which forms the boundary between Hālawa and Moanalua” and continue “along the ridge of the mountain bordered on the north by ‘Aiea and Kalauao, and on the west by Ko‘olau, to the top of a peak called Aloheo; which forms the boundary between Moanalua and Hālawa.” The leased area consisted of about 10,000 acres. However, excluded from the lease was the “sea, the lagoons, the fish and all ponds, the enclosed *kalo* lands, all *kuleana* awarded by the Land Commission, and so much of the *kula* lands adjoining the pond Ka Waiaho.” The lease was taken out for fifteen years with a rent of $500 per year (Bureau of Land Conveyance, Liber 9:174-179). Manuel Paiko took on a business partner, James Dowsett of ‘Ulupalakua Ranch fame. By 1870, their herd consisted of 1,400 head (Bureau of Land Conveyance:Liber 29:239).

James Dowsett and another partner, J. R. Williams, tried unsuccessfully to raise sugar. Due to lack of a railroad to haul cane and the mill burning down three times, they gave up trying to raise sugar in 1875. Altogether, about 100 acres had been planted in cane (Condé and Best 1973:327).

Maps from the late 1800s (Figure 11 and Figure 12) indicate the current study area was relatively undeveloped and was probably in cattle pasture leased by Manuel Paiko.

An 1873 Lyons map of Pearl Lochs (Figure 11) shows the lay of the land at the north end of the Airport Section 3 study area at that time. At the extreme north end of the Airport Section 3 area is a road connecting the short-lived Dowsett and Williams Halawa Mill with a boat landing that was presumably used for the exporting of sugar prior to the railroad connection. The immediate vicinity of where the project corridor crosses Hālawa Stream is shown as “mud flat”. There is no evidence of any active fishpond or cultivation in this immediate area at that time. Active cultivation is indicated in the area just north of the southern bend of Hālawa Stream about 200 m upstream from the project corridor (modern Kamehameha Highway). This is consistent with the Klieger (1995:61) reconstruction showing that the focus of agricultural activity was *mauka* of the project corridor (see Figure 9). Notably several fishponds in the general vicinity are

clearly indicated in a manner suggesting they were still active but the locations of the former Pu‘uone Kalokoloa Fishpond and Pu‘uone Kaulailoa Fishpond, previously bracketing the mouth of Hālawa Stream are identified as“mudflats” (see Figure 9),. While the project corridor for a kilometer south of Hālawa Stream is shown without any indication of human activity, the 1873 Lyons map (Figure 11) shows details in the immediate vicinity of the Pearl Harbor Naval Base Station. There is a notable small gulch in this immediate area that is named (what appears to be) “Kailalewai”. A trail is shown as crossing the project corridor just north of the Pearl Harbor Naval Base Station in this immediate area. The corridor to the south is shown without any indication of human activity.

The development of the O‘ahu Railway along the coast of Hālawa (see Figure 12) in the 1890s opened up the Hālawa lands to commercial sugarcane production. The Beasley map of 1899 shows no development along the project corridor other than the O‘ahu Railway. The development of a Pu‘uloa train stop (probably a small “camp”) is shown about 800 m southwest of the Pearl Harbor Naval Base Station. The “Halawa Station” is indicated by a small circle on the rail line just north of the mouth of Hālawa Stream west of the project corridor.

3.1.4 Modern Land Use

At the end of the nineteenth century, the Honolulu Sugar Company (re-named the Honolulu Plantation Company by 1906; see Figure 13) began leasing portions of Moanalua for sugar cane cultivation. By the mid-1930s, the company had more than 23 thousand acres of land leased, having expanded significantly up the coastal plain to the north inland of the East Loch of Pearl Harbor (see Figure 17). Sugar cane planting extended quite far seaward, but there is reason to believe the small coastal floodplain of Hālawa Stream was in rice production circa 1900 (Figure 13). The extent of early sugar cane cultivation in the area just south of Hālawa Stream is not altogether clear, but a 1919 map (Figure 14) shows a sugar cultivation symbol (faintly) on the southwest slope of Makalapa Crater near the present study area. A sugar plantation community developed at Puuloa Camp near Puuloa Station on the O‘ahu Railway and Land Company (OR&L) alignment on the Hālawa/Moanalua Ahupua‘a boundary (about 400 m west of the project corridor) in the early 1900s (see Figure 12 to Figure 14). Another new Hālawa Ahupua‘a community called Watertown developed adjacent to the east side of the Pearl Harbor entrance (see Figure 18).

Historic maps show the development of Honolulu plantation in the vicinity of the Airport Section 3 study area. The Donn 1906 map of Oahu (see Figure 13) appears to show the Honolulu Plantation fields including the majority of the northwest and central portions of the present study area. No other development is indicated in the vicinity, other than the OR&L railroad and Pu‘uloa Camp. The new OR&L railroad runs very close to the eastern margin of Pearl Harbor, seawards of the project corridor for most of its route across Hālawa Ahupua‘a. There is also an area of wetland rice and taro cultivation near the project corridor, within the bottom lands near the mouth of Hālawa Stream, and another just west of the Lagoon Drive Station in Moanalua Ahupua‘a.

The 1919 U.S War Department map (see Figure 14), the 1933 U.S. Army War Department map (Figure 16), and the circa 1935 Honolulu Plantation map (Figure 17) show a *makai*/*mauka* trending Honolulu Plantation Company railroad extending inland just south of Makalapa Crater; it crosses the project corridor just south of the Pearl Harbor Naval Base Station (Conde and Best

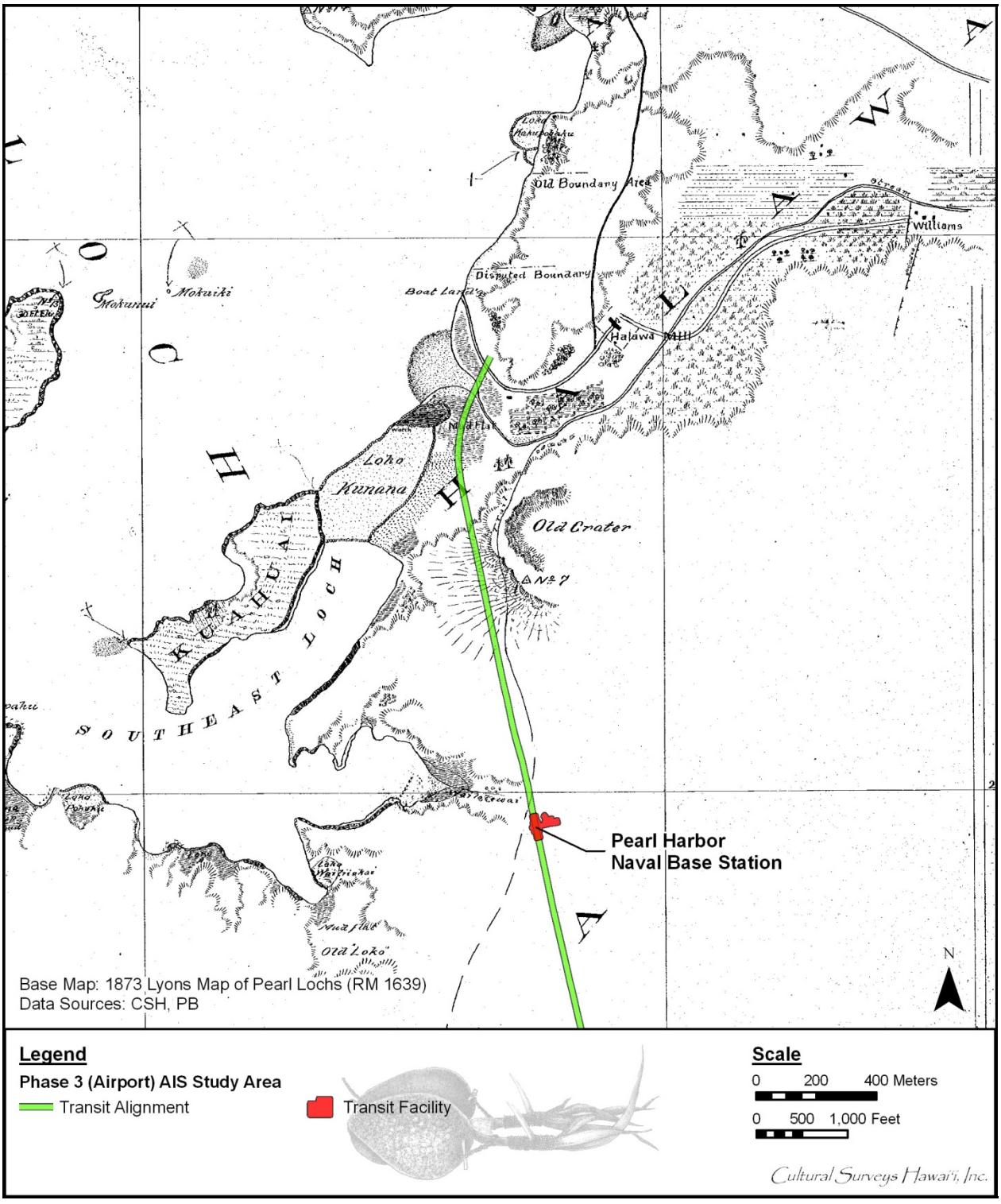

Figure 11. Overlay of Airport Section 3 study area on 1873 Lyons map of Pearl Lochs (Note: a trail is shown crossing the project corridor near the Pearl Harbor Naval Base Station at a crossing swale that appears to show a small water course flowing into the small Wailolowai Fishpond)

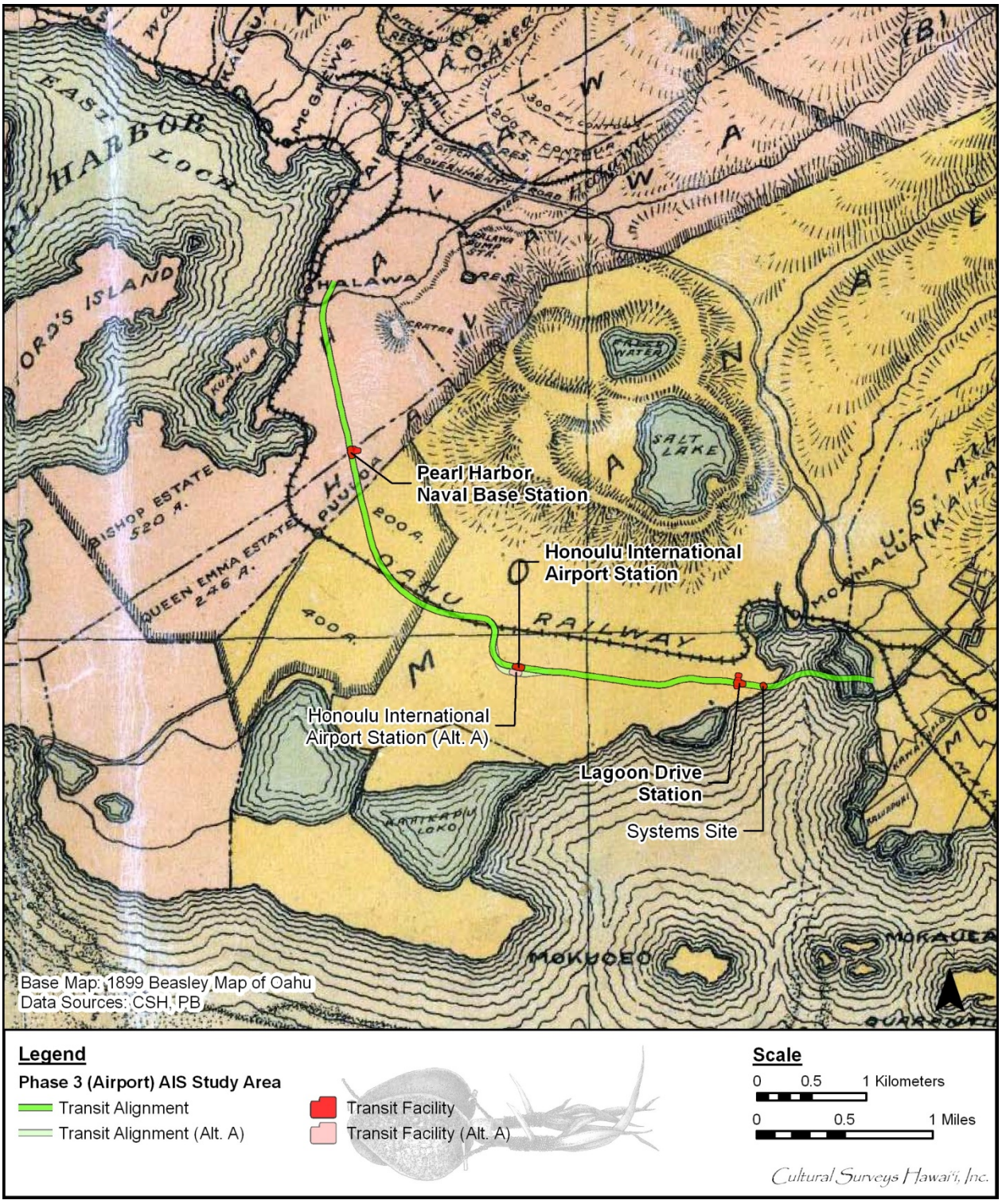

Figure 12. Overlay of the Airport Section 3 study area on 1899 Beasley map of O‘ahu

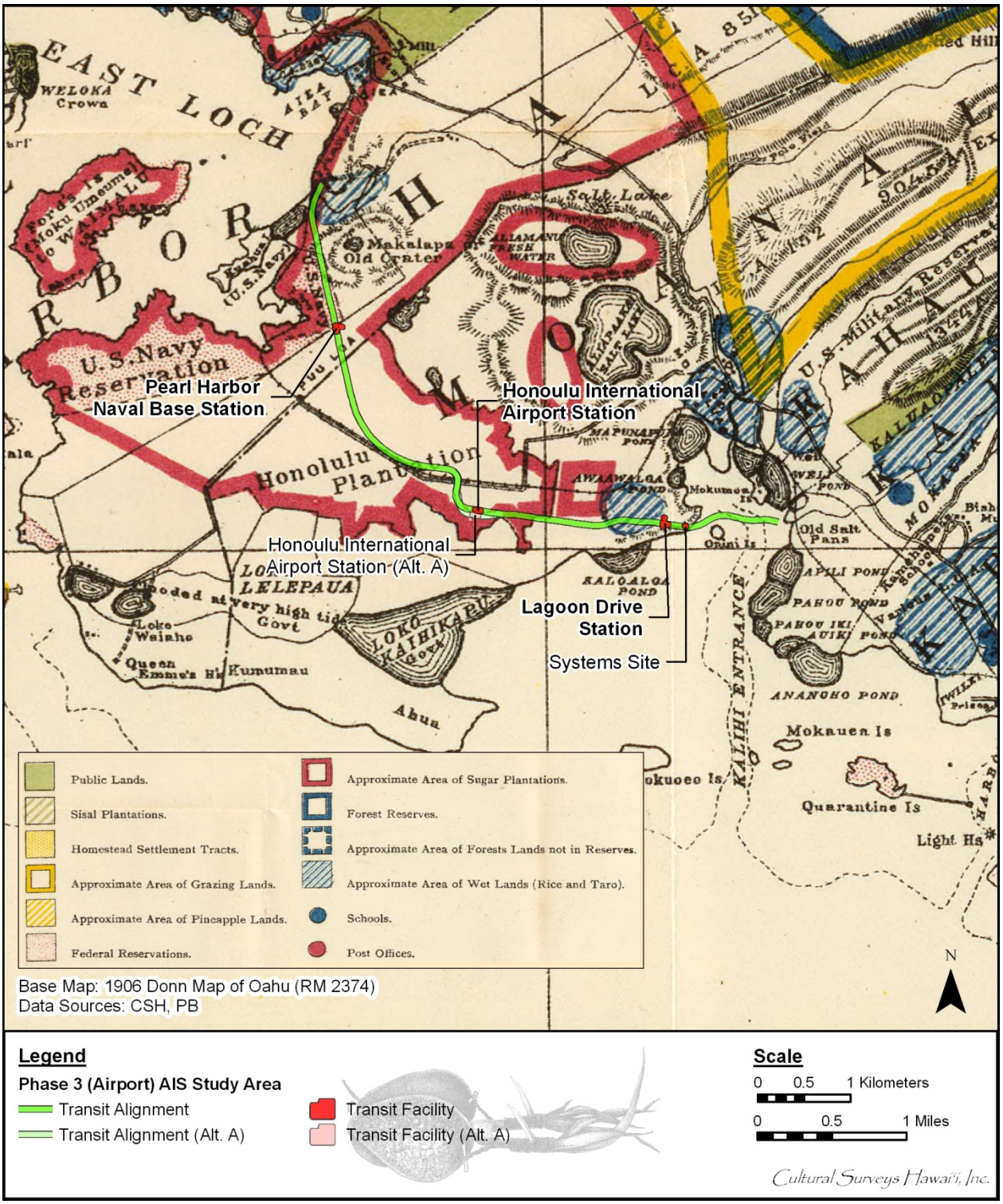

Figure 13. Overlay of the Airport Section 3 Study area on the 1906 Donn Map of Oahu (Note: extensive “Approximate Area of Sugar Plantations” and two “Approximate Areas of Wetlands” along project corridor

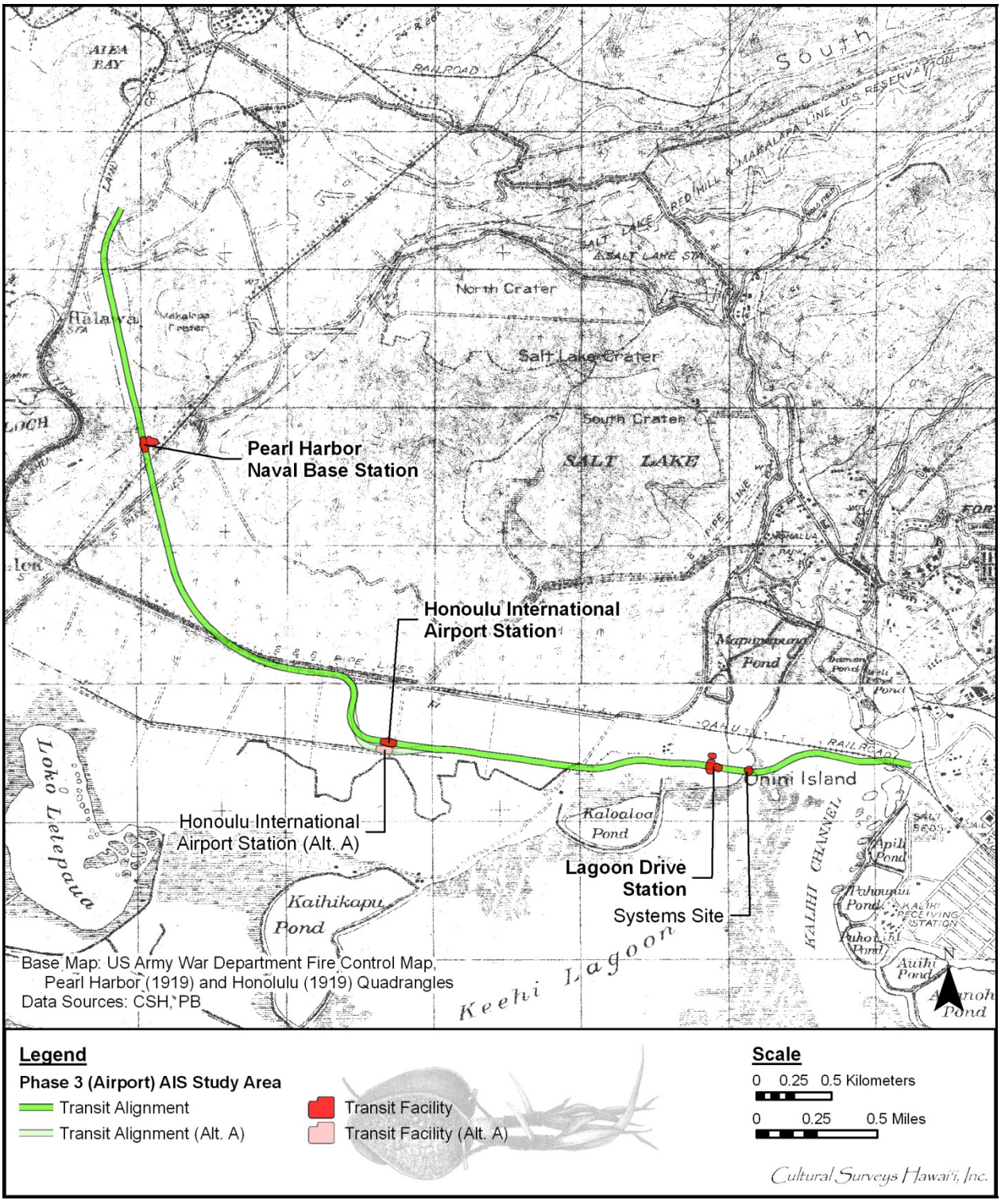

Figure 14. Overlay of Airport Section 3 study area on 1919 U.S. Army War Department Fire Control map of Pearl Harbor and Honolulu quadrangle maps

1973:331). These maps otherwise indicate little development near the project corridor in Hālawa Ahupua‘a.

The 1919 U.S War Department map (see Figure 14), the 1933 U.S. Army War Department map (Figure 16), and the circa 1935 Honolulu Plantation map (Figure 17) show a *makai*/*mauka* trending Honolulu Plantation Company railroad extending inland just south of Makalapa Crater; it crosses the project corridor just south of the Pearl Harbor Naval Base Station (Conde and Best 1973:331). These maps otherwise indicate little development near the project corridor in Hālawa Ahupua‘a.

A Taylor Honolulu Sugar Company Property map of 1925 (Figure 15) shows that the northern end of the Airport Section 3 project corridor, just north of Hālawa Stream, was at the southern end of sugar cane “Field 2”. The “Halawa Station” on the OR&L is called out on this 1925 map just north of Hālawa Stream, west of the north end of the Airport Section 3 study area. “Land condemned for Naval Station” is shown adjacent to the west (*makai*) side of the Airport Section 3 corridor west of Makalapa Crater.

The circa 1935 Honolulu Plantation map (Figure 17) and the Composite Site Map prepared by Anderson and Bouthillier (1996, see Figure 18) corroborates that most of the Airport Section 3 project corridor in Hālawa Ahupua‘a was in sugar cane fields for many decades and that the cultural features were well to the south, including Watertown (Hālawa Ahupua‘a), Puuloa Camp (on the Hālawa/Moanalua Ahupua‘a boundary) and Lelepaua Pond, Ka‘ihikapu Pond and the 1930s salt works (Moanalua Ahupua‘a). The Anderson and Bouthillier map (1996, see Figure 18) assigned a “low probability” for archaeological and historical resources to most of the lands traversed by the Airport Section 3 corridor because of the many decades this region was under sugar cane cultivation as well as the distance of this area from the coast and from known cultural loci such as fishponds and Pu‘uloa Camp.

Pearl Harbor had been the focus of American interests in the Hawaiian Islands for many decades prior to annexation. Improvement of the Pearl Harbor entrance was a major concern following annexation in 1898, with an eye on the need to establish a coaling station for American warships travelling to the Philippines and beyond. Some 429 acres were purchased from Queen Emma Kaleleonalani for $28,285 which allowed for the development of Fort Upton (changed to Fort Kamehameha in 1909). An additional 400 acres were purchased from the Damons in 1911 (Watanabe 1991).

In 1908, the Navy undertook the dredging of the Pearl Harbor channel that was blocked by a shallow sand bar that had greatly restricted earlier development efforts. Much of the fill from this and later dredging efforts was used to fill in low-lying lands. Five separate coastal defense batteries were built (including Battery Selfridge and Battery Hawkins). The Fort Kamehameha post housed Hawai‘i’s first aviation unit in 1917-1918. The population of the base remained about 1800 until World War II (Watanabe, 1991).

In the 1930s, an Army Air Corps airfield was established to the west of Rodgers Airport. The Hickam Air Force Base (AFB) web site offers the following brief history of this military base’s early development:

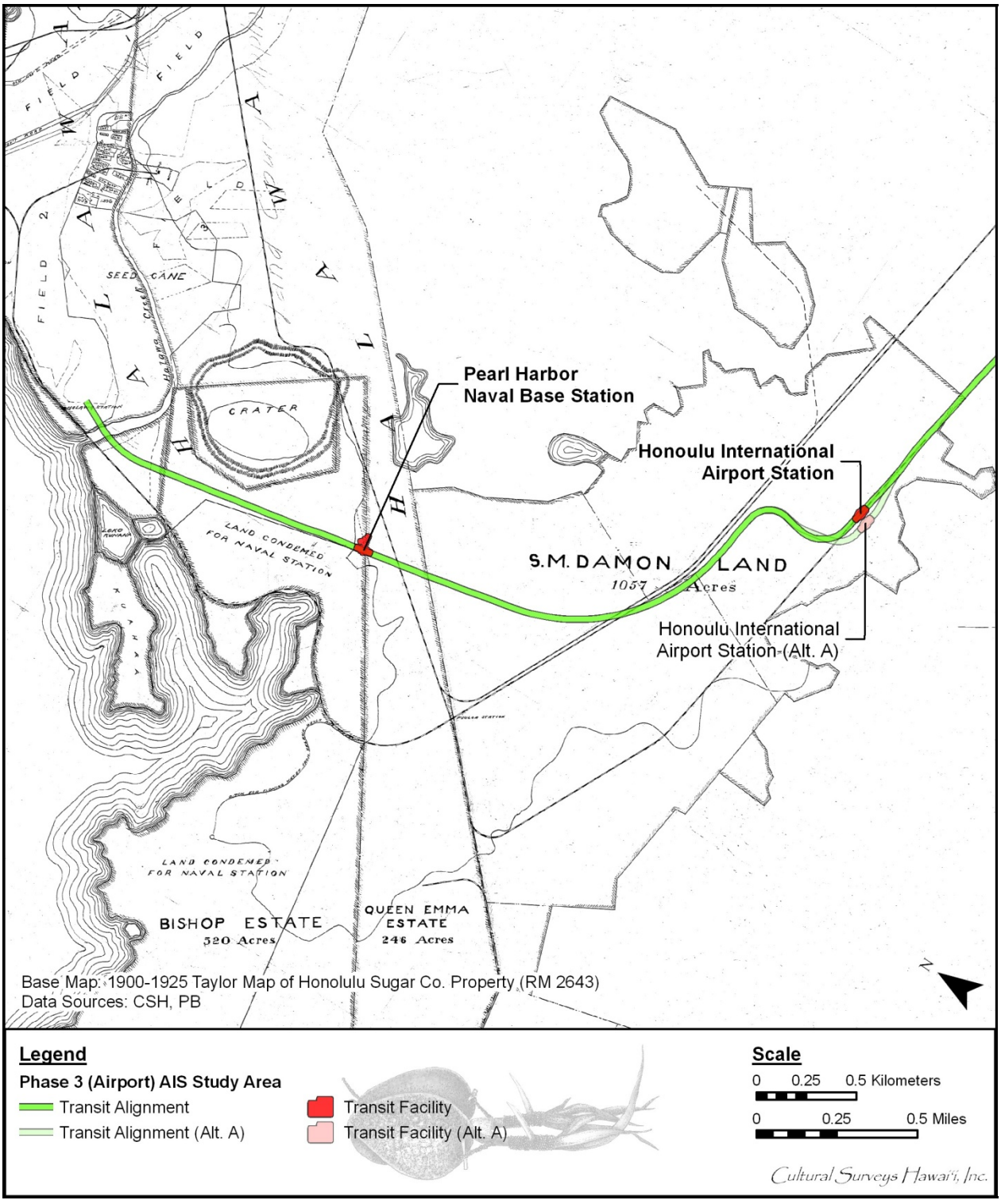

Figure 15. Overlay of Airport Section 3 study area on 1925 Taylor Honolulu Sugar Company Property map

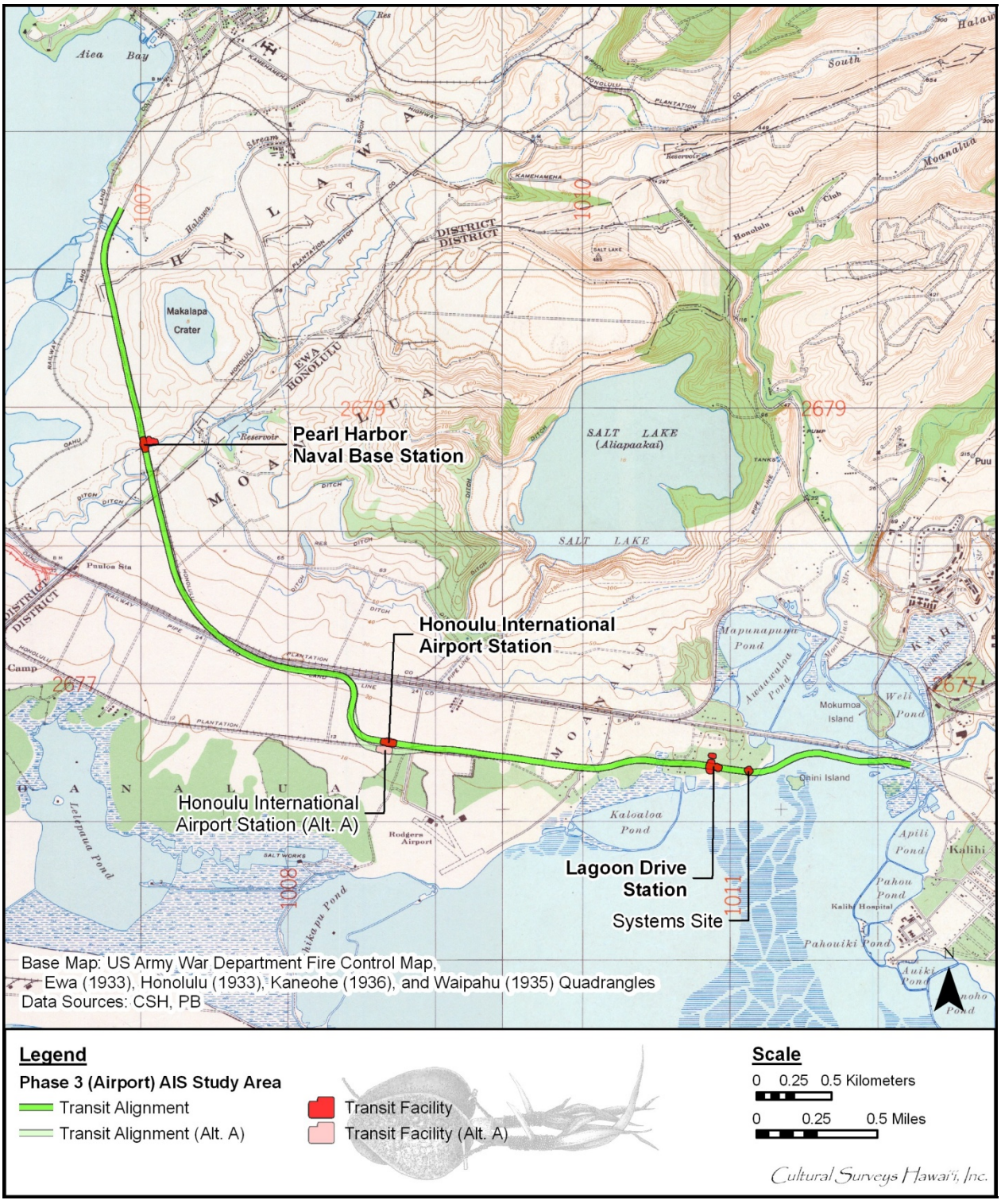

Figure 16. Overlay of Airport Section 3 study area on 1933 U.S. Army War Department Fire Control map

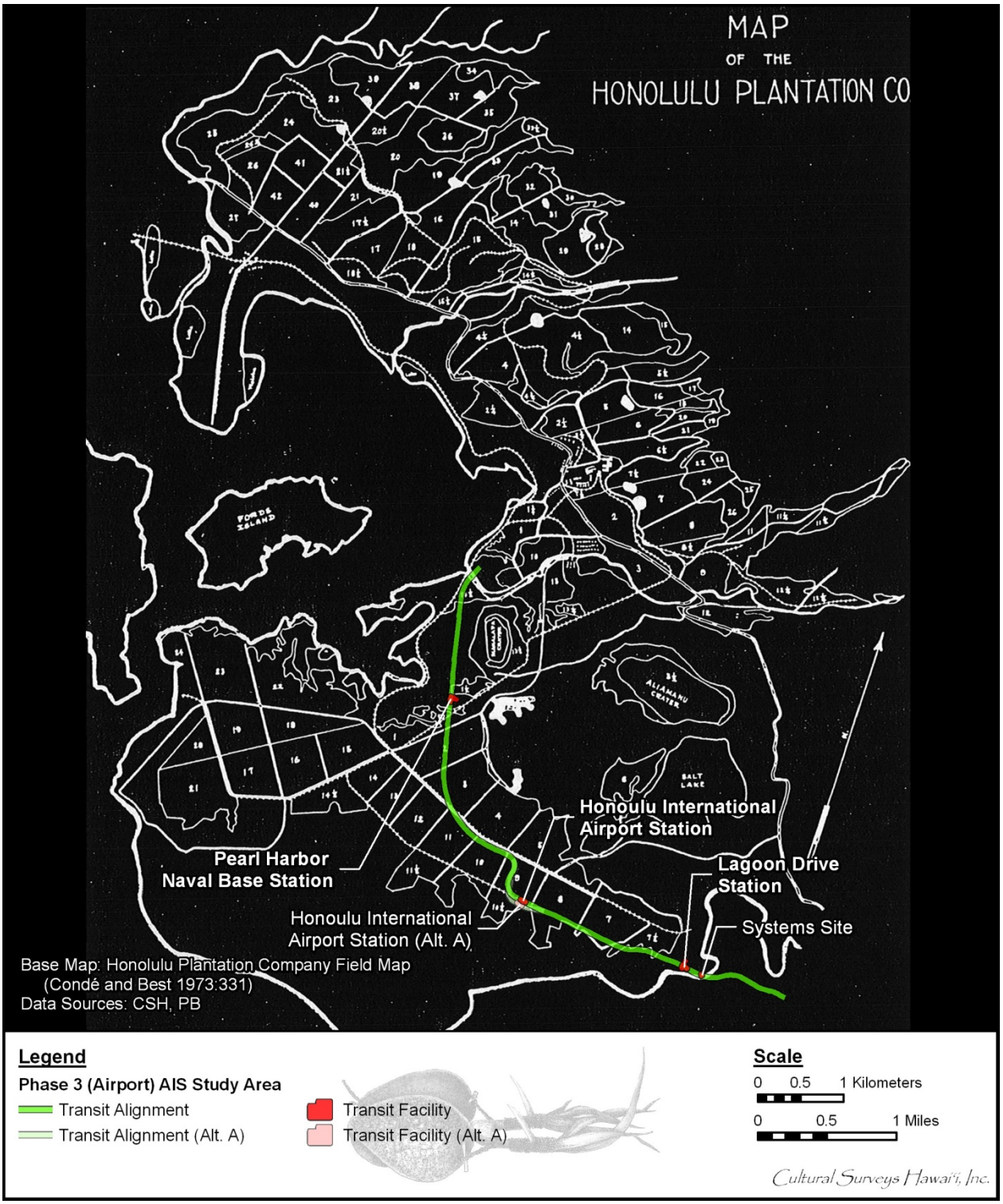

Figure 17. Overlay of the Airport Section 3 study area on circa 1935 Honolulu Plantation Field map (Condé and Best 1973:331)

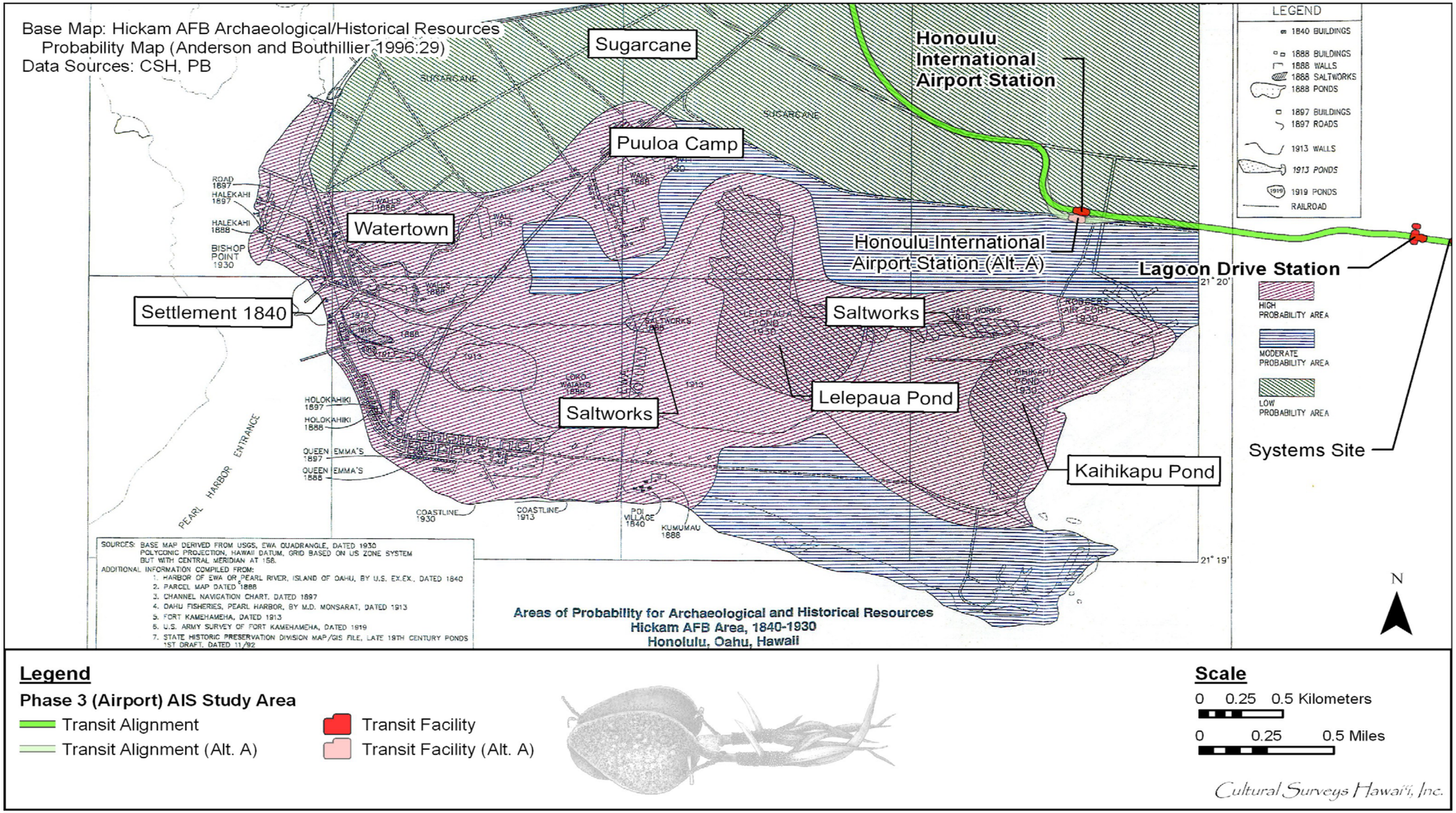

Figure 18. Overlay of Airport Section 3 study area on Composite Site Map 1840-1930 (adapted from Anderson and Bouthillier 1996:29) showing the project corridor and cultural resources of the greater Hickam area including Watertown (Hālawa Ahupua‘a), Puuloa Camp (on the Hālawa/Moanalua Ahupua‘a boundary), Waiaho Pond, Lelepaua Pond, Ka‘ihikapu Pond, the 1930s salt works (all in Moanalua Ahupua‘a), as well as the identified Areas of Probability for Archaeological and Historical Resources

> In 1934, the Army Air Corps saw the need for another airfield in Hawai‘i and assigned the Quartermaster Corps the job of constructing a modern airdrome from tangled brush and sugar cane fields adjacent to Pearl Harbor on the island of O‘ahu. The site consisted of 2,200 acres of ancient coral reef, covered by a thin layer of soil, located between O‘ahu's Waianae and Koolau mountain ranges, with the Pearl Harbor channel and naval reservation marking its western and northern boundaries, John Rodgers Airport to the east, and Fort Kamehameha on the south. The new airfield was dedicated May 31, 1935 and named in honor of Lt. Col. Horace Meek Hickam, a distinguished aviation pioneer killed Nov. 5, 1934, at Fort Crockett in Galveston, Texas.
>
> Hickam AFB now consists of 2,850 acres of land and facilities valued at more than $444 million (Hickam Air Force Base 2008.)

The 1943 U.S. War Department map, Aiea Quadrangle (Figure 19), shows the extant Kamehameha Highway and substantial residential development recently constructed on both sides of the highway within Hālawa Ahupua‘a. The 1953 U.S. Army Mapping Service map, Honolulu Quadrangle (Figure 20), shows the western portion of the Airport Section 3 project corridor in Hālawa Ahupua‘a much as it is today.

3.2 Moanalua Ahupua‘a

3.2.1 Early Historic Period

Early European visitor records indicate that in the late 1700s a sizeable Hawaiian population resided in Moanalua Ahupua‘a. Settlement concentrated around the fertile bottom lands of the Moanalua Stream area on the east side of the ahupua‘a. The physiography of Moanalua provided a rich environment for sustenance and building materials; this rhichness is dorumented in the botanical survey by Bishop and Herbst (1970) which included recording of 197 endemic and indigenous plant species within the ahupua‘a. The landscape created by streams deeply cutting into the Ko‘olau volcano and the emayment created by offshore reefs provided a broad zone of rich alluvium, Hawaiians created an irrigated system of pond field taro gardens fringed with embankemtns outlining the fields on which were grown bananas and sugar cane. The steam water that supported the fields fed into the shallow bay and sitributed organic nutrients that attracted large fish populations into the bay. This environment supported construction of fishponds that allow balanced exploitation and management of these resources.

The navigator Otto von Kotzebue, in the employ of the Russian navy, visited Honolulu in November and December 1816. Kotzebue decided "to undertake a little excursion on foot [in order to survey the coast] to the river called Pearl River by the English [known variously in Hawaiian as “Wai momi” “Awalau” and “Pu‘uloa”; see Sterling and Summers 1978:46], lying half a day's journey to the west of Gana-Rura [Honolulu]." Kotzebue and two shipmates set out on December 8, 1816:

> On our way, we met now sugar plantations, now taro fields, now scattered huts; and so, without noticing it, we covered the five miles to the large village of Mauna-Roa [i.e. Moanalua - the Russians had misheard the name and thought it the same as Mauna Loa on the island of Hawai‘i], situated in a delightful valley on a mountain slope. From here, there winds to the sea a fast-flowing river of the

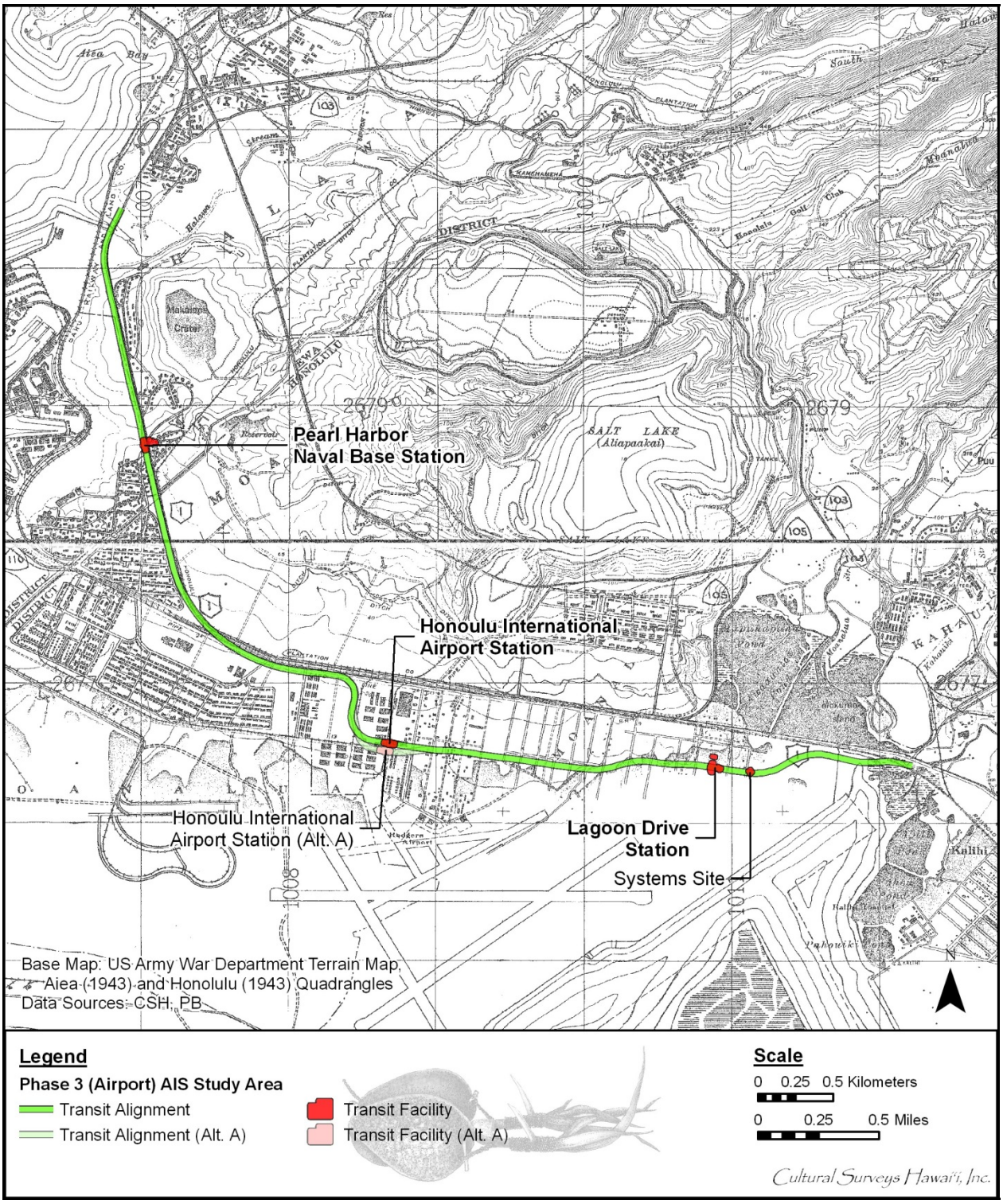

Figure 19. Overlay of the Airport Section 3 study area on 1943 U.S. Army War Department Terrain map of the Aiea quadrangle

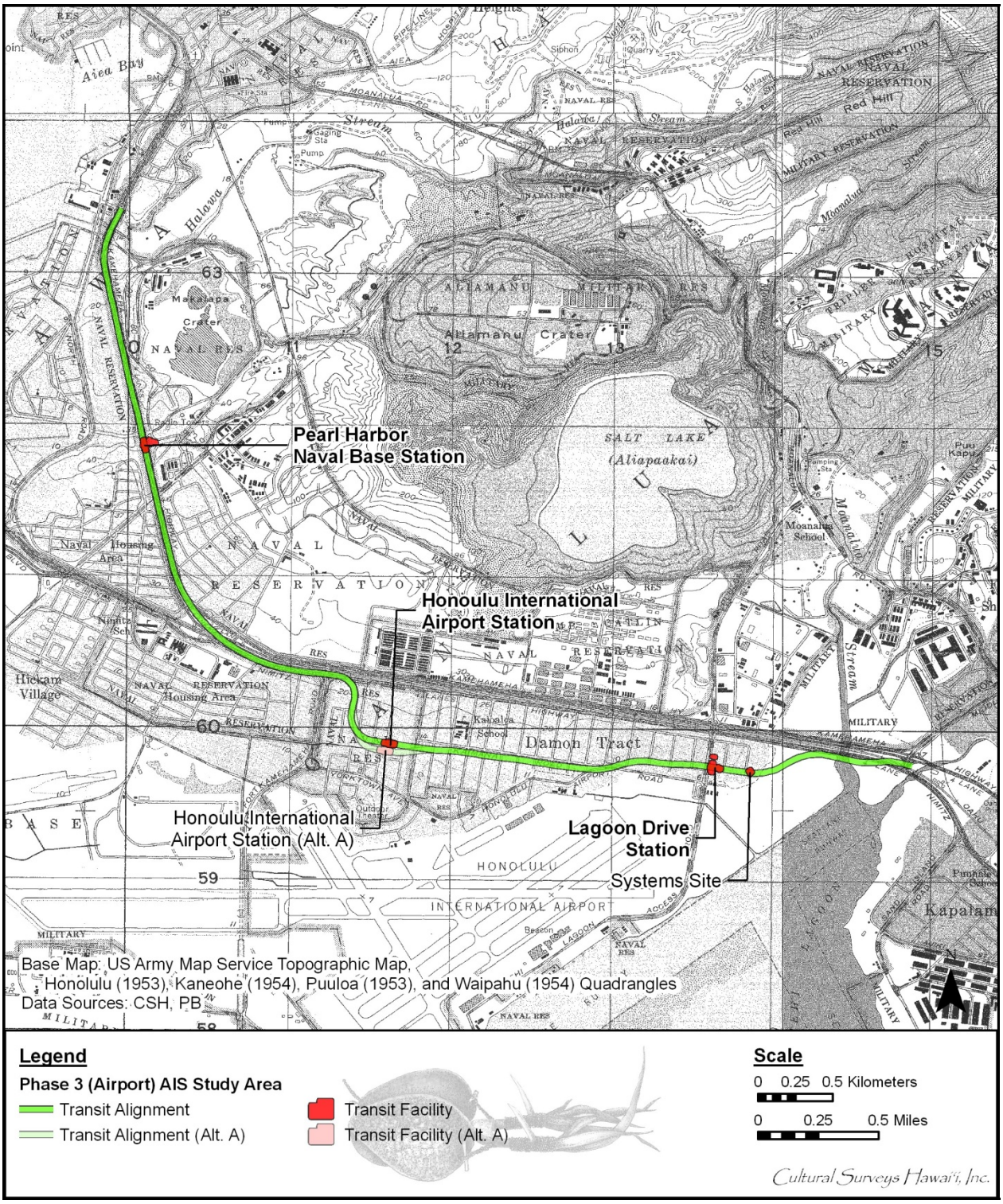

Figure 20. Overlay of Airport Section 3 study area on 1953 US Army Mapping Service Topographic map of Aiea quadrangle Honolulu (1953), Kāne‘ohe (1954), Puuloa (1953) and Waipahu (1954) quadrangles, showing study area

> same name. It is visible at a great distance and wanders through the mountains and cliffs in the most picturesque fashion. In front of the village, consisting of pretty little reed huts, one encounters two groves, one of coconut palms, the other of breadfruit. We passed through these little groves, to take a rest on the hill lying immediately behind (Barratt 1988:232).

On the hill where Kotzebue and his companions stopped, "a general view of Honolulu Harbour opened up to us. Our compass was set up and I took a number of angles with my sextant" (Barratt 1988:232). The following year, 1817, Kotzebue drew a map of the south coast of O‘ahu. The map (see Figure 8) identifies Salt Lake (“*Озеро Соленое”)*, Mauna-Roa (Moanalua) River (“*P. Моина-роа*”), and fish ponds (“*Рыбныя Пруды”)* along the shoreline of Moanalua. The map also shows a profusion of taro *lo‘i* (irrigated fields) in the lowlands of Moanalua below Āliapa‘akai (Salt Lake), spreading out from Moanalua Stream and stretching back from the fishponds at what was then the shore. The Kotzebue map is quite early (reflecting the area in 1816) and should be understood more as a detailed sketch than as a surveyed map.

Āliapa‘akai itself would have provided a valuable resource to the Hawaiians of Moanalua before and after western contact. The missionary William Ellis presents this description of Salt Lake in the 1820s:

> About six miles to the west of Honoruru, and nearly as far from the village of Eva, on the Pearl river, there is a singular natural curiosity - a small circular lake, situated at a short distance from the sea shore, so impregnated with salt, that twice in the year the natives take out between two and three hundred barrels of fine clear, hard, crystalized salt: this lake is not only an interesting natural curiosity, but an important appendage to the island. It belongs to the king, and is not only useful in curing large quantities of fish, but furnishes a valuable article of commerce; quantitites of it having been sent for sale to Kamtschatka, and used in curing seal skins at the different islands to which the natives have sent their vessels for that purpose, or sold in the islands to Russian vessels, from the settlements on the north-west coast of America. (Ellis 1969:18-19)

The trade in salt dwindled by the mid-nineteenth century and, as a visitor of that time noted, the salt in the lake had "almost wholly disappeared" (Bates 1854:102).

The grove of coconut palms at Moanalua mentioned by Kotzebue was described in more detail by a visitor of the 1830s:

> But to return to the little valley, about three miles from Honolulu on the road to Ewa over. . .On looking down, you behold a large grove of cocoanut trees, some of which give evidence of having been blown upon with no ordinary breath; appearing to have been nearly prostrated when about twenty feet high, they again shot up in a perpendicular direction and now present the curious phenomenon of living trees, the upper half of whose trunks are almost at right angles from the lower. It is a little remarkable that the surrounding trees on every side are perfectly straight. (Hall 1839:97)

Maps of Moanalua produced during the second half of the nineteenth century – i.e. before substantial alterations to the landscape – display the substantial development by the Hawaiians of

the "large village" (Kotzebue) of Moanalua by the time of western contact. A map (ca. 1890s) by M.D. Monsarrat and C.J. Lyons (see Figure 21) shows the expanse of fishponds that extended along the shores of Moanalua and the adjacent *ahupua‘a* of Kahauiki and Kalihi.

It should be noted, however, that the present Airport Section 3 project alignment does not appear to cross any of these fishponds (see Figure 21 and Figure 22). Furthermore, the present project alignment extends across modern fill land in the vicinity of the mouth of Moanalua Stream. While the natural mouth of Moanalua Stream was a rich area of Hawaiian settlement, the area today is actually 300 m inland of the present project alignment (see Figure 23) due to the very substantial land reclamation infilling of what traditionally were coastal shallows (see Figure 5 regarding the extent of fill land and compare Figure 16 and Figure 17 that show the shoreline now extended 500 m outward).

In 1826, ten years after Kotzebue observed the "large village" of Moanalua, Hiram Paulding, a naval officer following the same route from Honolulu to Pearl River, recorded that “the country was thinly inhabited. We met with no considerable village or rich valley (Paulding 1970:205).

The diminished population that Paulding observed in Moanalua likely reflects the same changes that took place throughout the Hawaiian Islands during the years following western contact. The population of Moanalua at the time of the first large-scale census by American missionaries in 1835-36 totaled 625 and included 234 adult females, 252 adult males, 48 female children, and 91 male children (Schmitt 1973:19). These figures tragically reflect the decimation of the native population by western-introduced diseases and the upsetting of traditional social patterns by the influx of western commercial ideals.

The work of Anderson and Bouthillier (1996) documents two coastal communities in the Hālawa-Moanalua coastal plain: an unnamed settlement (annotated as “Settlement 1840”) just southwest of the area that would become known as Watertown in the Pearl Harbor entrance (it is unclear if there was any continuity between the 1840 settlement and “Watertown” of the 1930s), and another community known as “Poi Village” on the southwest coast of the Airport Section 3 study area (Figure 7). These are assumed to have been traditional Hawaiian fishing villages. It seems probable that settlement closer to the study corridor was effectively prevented by the low-lying marshy ground in the vicinity.

3.2.2 Fishponds of Moanalua

The fishponds along the shoreline of Moanalua - *loko kuapā* that were controlled by the *ali‘i* - are another resource that must have greatly increased the productivity of the area. The fishponds of the Hālawa-Moanalua Plain are summarized in Table 4.

Loko Waiaho and Loko Ke‘oki were located in the western portion of the Hickam AFB lands, while Loko Lelepaua and Loko Ka‘ihikapu were about 1.3 km southwest and southeast (respectively) of the Airport Section 3 corridor.

Apple and Kikuchi (1975:2) discuss the impact that such fishponds would have had on the general population of an area:

> Accessibility to these ponds and their products was limited to the elite minority of the native population - the chiefs and priests. Prehistoric ponds and pond products appear to have been taboo to the vast majority of Hawaiians and to have yielded

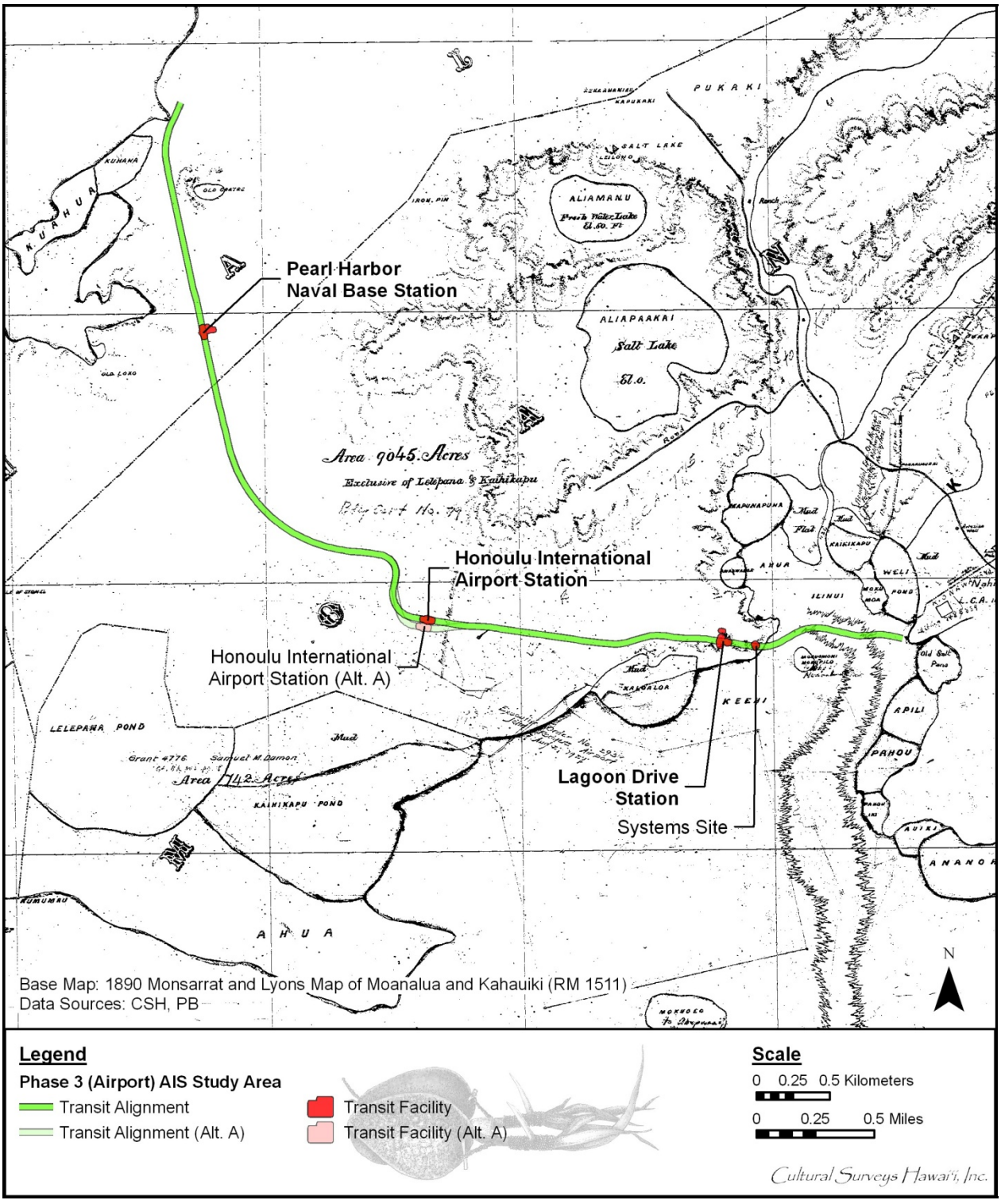

Figure 21. Overlay of Airport Section 3 study area on 1890 Monsarrat and Lyons Moanalua and Kahauiki map (RM 1511). Note the former open water east of the Lagoon Drive Station

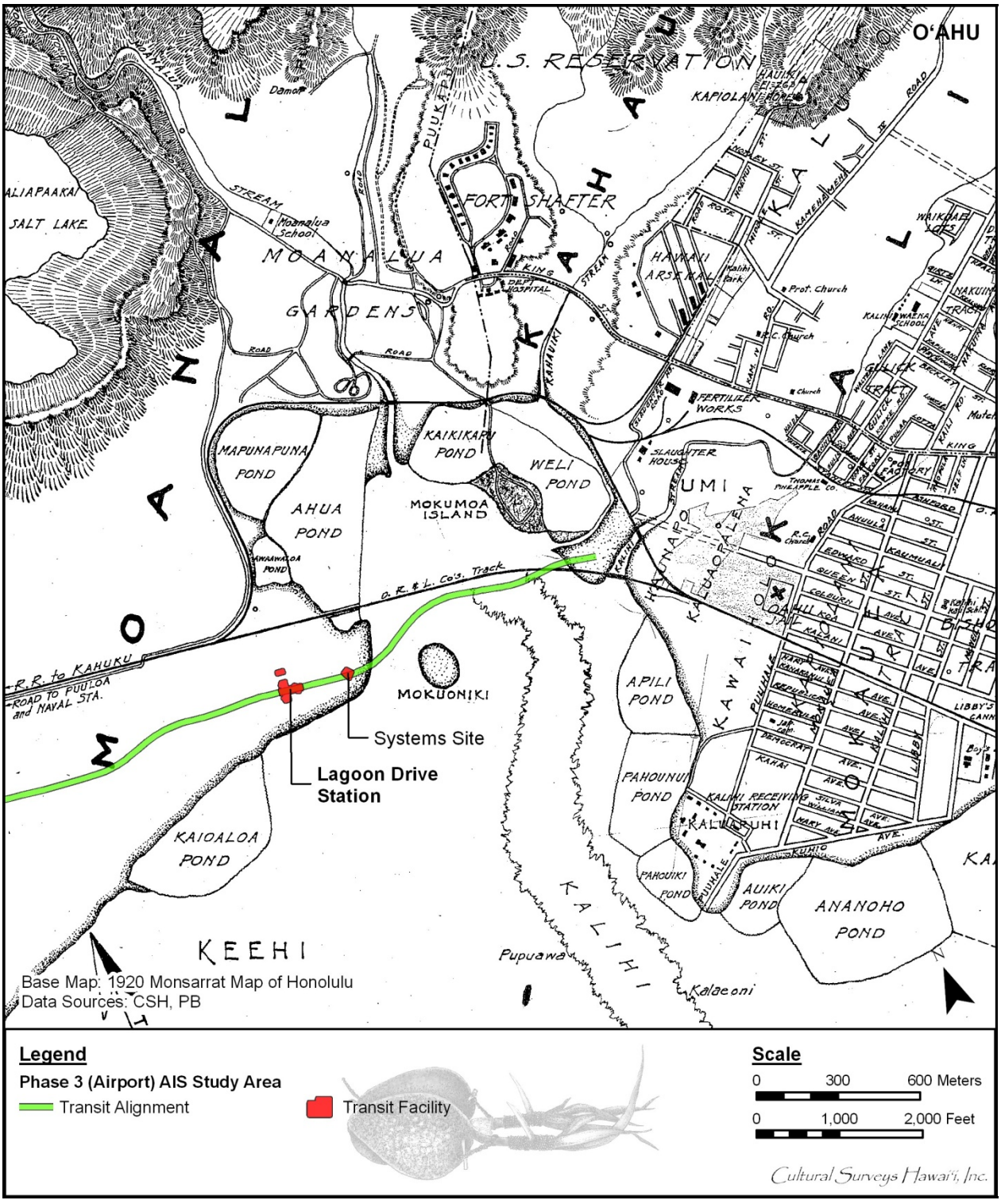

Figure 22. Overlay of the Airport Section 3 study area on 1920 Monsarrat Honolulu District Map. Note the former open water east of the Lagoon Drive Station

Table 4. Fishponds (*Loko*) of the Hālawa-Moanalua Plain

Name	Source	Site Number 50-80-13-	Area (acres)	Construction Features	Relationship to Project Alignment
Mapunapuna (Moanalua)	McAllister (1933:93)	78	40	Wall mostly of coral 1600 feet long, 10 feet wide, 1 foot above water on inside, 2.5 feet high outside, 4 *mākāhā*	600 m inland of Lagoon Drive Station (see Figure 22)
Keawamalia (Moanalua)	McAllister (1933:93)	78	“small”	Surrounded by earth embankments	600 m + inland of Lagoon Drive Station (adjoins Mapunapuna Pond on *mauka* side)
Awawaloa (Moanalua)	McAllister (1933:93)	79	8.8	Coral rock wall 900 feet long, 2 *mākāhā*	400 m inland of Lagoon Drive Station (see Figure 22)
Kaloaloa (Kailoloa) (Moanalua)	McAllister (1933:93)	80	36	Semicircular wall of coral 2700 feet long, 6 feet wide, 3 feet high, 3 *mākāhā*	200 m S of project alignment west of Lagoon Drive Station (see Figure 22)
Ka‘ihikapu (Moanalua)	McAllister (1933:93)	81	258	Coral wall 4500 feet long, 3-8 feet in width, 3 feet high with 3 *mākāhā*	800 m S of Airport Station (see Figure 21)
Lelepaua (Moanalua)	McAllister (1933:93)	82	332	Earthen and coral embankments 10 feet or more wide	1000 m SE of project alignment west of Airport Station (see Figure 21)
Āliapa‘akai (Moanalua)	McAllister (1933:93-94)	83		Natural “Salt Lake”	1400 m N of Project alignment Lagoon Drive Station (see Figure 21 and Figure 22)
Waiaho (Moanalua)	McAllister (1933:101)	94	32	Coral and sand walls and 5 *mākāhā*	2 km SW of the Project alignment (east side of entrance to Pearl Harbor; see Figure 18 and Figure 25)
Ke‘oki (Hālawa)	McAllister (1933:101)	95	-	Narrow wall of coral, rock and sand	3 km SW of the project alignment (east side of entrance to Pearl Harbor; see Figure 25)
Papiolua (Hālawa)	McAllister (1933:101)	96	1	wall 150 feet long, 4 feet wide and high, no *mākāhā*	3 km west of the project alignment (east side of entrance to Pearl Harbor; see Figure 25)

Name	Source	Site Number 50-80-13-	Area (acres)	Construction Features	Relationship to Project Alignment
Loko-a-Manō (Loko Amana) (Hālawa)	McAllister (1933:102)	97	-	-	1.5 km west of Pearl Harbor Naval Base Station at South East Loch (see Figure 25)
Loko Pōhaku (Hālawa)	McAllister (1933:102)	98	2.5	-	1.5 km west of Pearl Harbor Naval Base Station at South East Loch (see Figure 25)
Wailolokai (Hālawa)	McAllister (1933:102)	99	Very small	-	450 m west of Pearl Harbor Naval Base Station at South East Loch (see Figure 25)
Wailolowai (Hālawa)	McAllister (1933:102)	100	-	-	450 m west of Pearl Harbor Naval Base Station at South East Loch (see Figure 25)
Makalapa Crater (Hālawa)	McAllister (1933:102)	101	-	Lake within crater	300 m E of project alignment N of Pearl Harbor Naval Base Station (see Figure 25)
Loko Kunana (Hālawa)	McAllister (1933:102)	102	25	Kuahua Island forms one side, walls from shore to island are 1800 feet and 1950 feet long, approx. 5 feet wide and 3 feet high	On the south side of the mouth of Hālawa Stream 200 m west of the project alignment (see Figure 25)
Loko Muliwai (Hālawa)	McAllister (1933:102)	102	4	Wall 500 feet long with 1 *mākāhā*	On the south side of the mouth of Hālawa Stream 200 m west of the project alignment (see Figure 25)
Wai Alua (Hālawa)	Klieger 1995:61	-	-	N side of Hālawa Stream	120 m inland at N side of Hālawa Stream (see Figure 9)
Wai Kalaua (Hālawa)	Klieger 1995:61	-	-	N side of Hālawa Stream	180 m inland at N side of Hālawa Stream (see Figure 9)
Wai Kuohoi (Hālawa)	Klieger 1995:61	-	-	S side of Hālawa Stream	700 m inland at S side of Hālawa Stream (see Figure 9)

Name	Source	Site Number 50-80-13-	Area (acres)	Construction Features	Relationship to Project Alignment
Wai Kai (Hālawa)	Klieger 1995:61	-	-	S side of Hālawa Stream	800 m inland at S side of Hālawa Stream (see Figure 9)
Āhua Pond	McAllister (1933:93)	-	-	Adjacent to Awaawaloa Pond	150 m inland of Lagoon Drive Station (see Figure 22)
Kaikikapu Pond	McAllister (1933:91)	-	20	Formerly connected to Weli Pond, 900 ft long wall from Mokumoa Island to Moanalua	400 m inland E of Lagoon Drive Station (see Figure 22)

> them no direct benefit. However, indirect public benefit came from ownership by the chiefs of exclusive food sources. Royal fishponds...insured less demand on the commoners' food production resources. Every fish taken from a royal fishpond left its counterpart in the natural habitat available to lesser chiefs and commoners.

The fishponds of Moanalua, although not necessarily representing beneficial resources for the commoners, can be seen as evidence of a thriving chiefly class in the *ahupua‘a*.

3.2.3 The Māhele

At the Māhele in 1848, the *ahupua‘a* of Moanalua was granted to Lot Kamehameha (later Kamehameha V) with fee simple title to native tenants. Subsequently, Land Commission Awards (LCAs) were granted to 101 commoners for parcels they were actively cultivating or residing on. The Land Commission Awards were heavily concentrated well *mauka* of the Airport Section 3 corridor in the “bottom lands” along Moanalua Stream and two tributaries (Figure 23). No commoner land commission awards are known in the vicinity of the corridor (although George Beckley’s claim for LCA 818 (in Kalihi) is not far removed (see Figure 10 and Appendix B). It was common for the *ali‘i* and/or their *konohiki* (overseers) to retain fishponds and unique cultural resources such as the coastline at the mouth of Pearl Harbor.

3.2.4 Mid- to late-1800s

Upon the death of King Kamehameha V in 1872, Princess Ruth Ke‘elikōlani received the *ahupua‘a*. When Princess Ruth died in 1883, the land transferred to Princess Bernice Pauahi Bishop. A codicil of Princess Bernice's will granted Moanalua to Samuel M. Damon upon her death in 1884. Damon and his heirs began buying up the *kuleana* lands of the *ahupua‘a*. Damon kept much of Moanalua in pasture, with portions leased to rice, sugar and banana growers (Anderson et. al. 1996:A61).

In the late 1800s, there were a number of developments in the Moanalua coastal plain that were not well documented (see Anderson and Bouthillier 1996 for discussion). Starting from the east side of Pearl Harbor entrance and moving to the east, these included the coastal communities of Holokahi, Queen Emma’s property, Poi Village, and Kumumau (see Figure 18). These were all on the coast. None were close to the Airport Section 3 corridor. In fact, the 1890 Monsarrat and Lyons map (see Figure 21) shows no development in the project vicinity other than fishponds.

3.2.5 1900s

At the end of the nineteenth century, the Honolulu Sugar Company (later Honolulu Plantation Company) began leasing portions of Moanalua for sugar cane cultivation. Extensive sugar cane planting extended seaward into the Airport Section 3 corridor area (see Figure 17). It appears that a Honolulu Plantation Company railroad line crossed east-west *makai* of the present study area by 1906 and the OR&L ran east-west just to the north (at the Nimitz alignment, see Figure 9). A sugar plantation community developed at Pu‘uloa Camp circa 1930, and another community called Watertown developed adjacent to the east side of Pearl Harbor entrance. A map of the Honolulu Plantation Company lands dating circa 1935 (see Figure 17) indicates that the Moanalua portion of the study area was in commercial sugar cane Fields Nos. 2, 3, 7, 7 ½, and 8 to 11 (much of the Hālawa portion of the Airport Section 3 corridor traversed sugar cane Field No. 1).

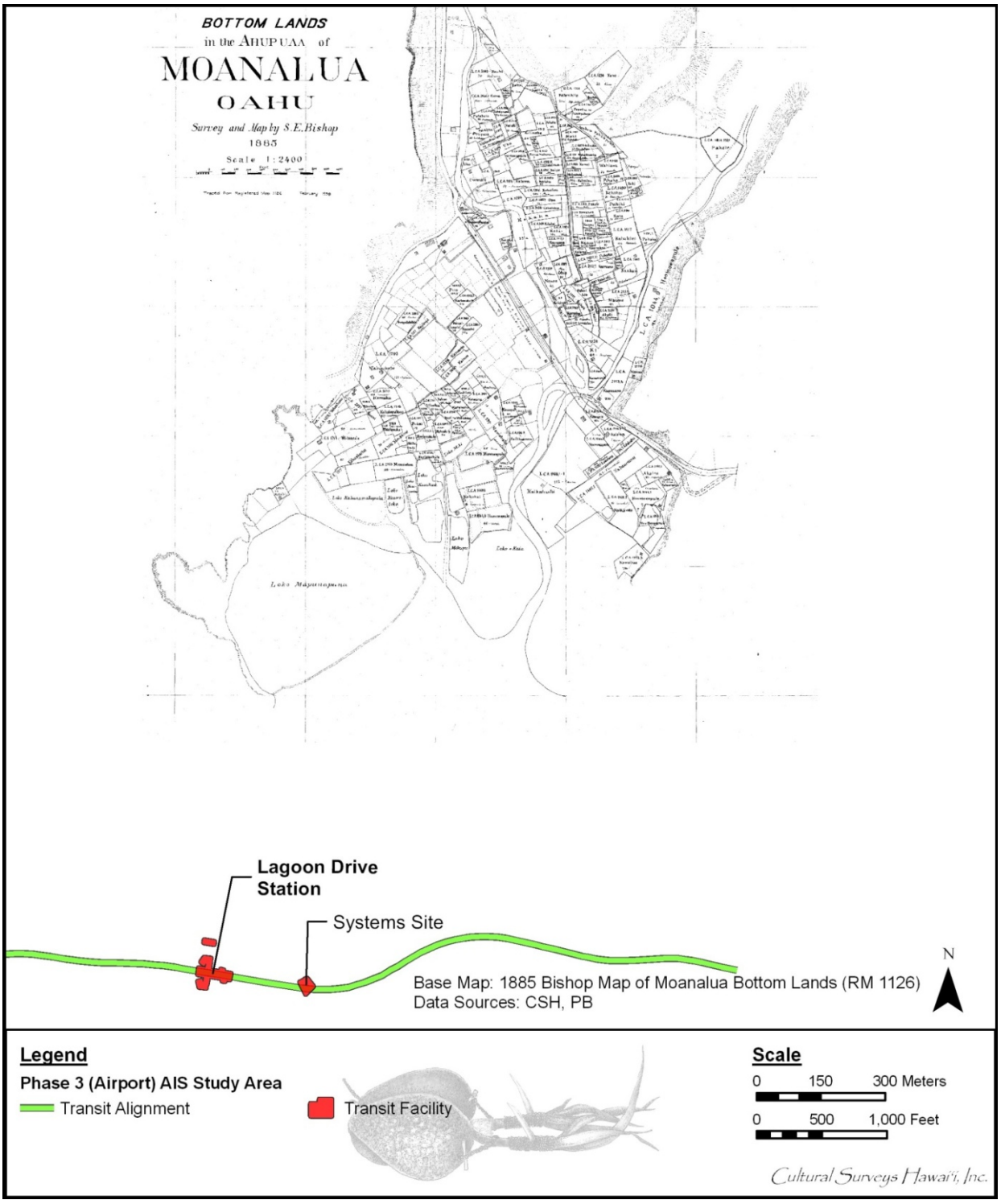

Figure 23. Overlay of Airport Section 3 study area on1885 Map of the Bottom Lands (RM 1126) in the Ahupua‘a of Moanalua by S.E. Bishop, showing the extensive network of *lo‘i* and LCAs in lower Moanalua (Note: the project corridor is built on fill lands well seaward of the former Moanalua Stream mouth

The 1933 U.S. War Department Fire Control map notes the presence of a salt works between Lelepaua Pond and Ka‘ihikapu Pond (see Figure 16 and Figure 18). Rodgers Airport (which was to become the Honolulu International Airport) is understood to have been begun in 1930 (see Figure 16). Pearl Harbor had been the focus of American interests in the Hawaiian Islands for many decades prior to annexation in 1898. Improving Pearl Harbor entrance was a major concern following annexation with an eye on the need to establish a coaling station for American warships running to the Philippines and beyond. Some 429 acres were purchased from Queen Emma Kaleleonālani for $28,285 and developed as Fort Upton (changed to Fort Kamehameha in 1909) (Watanabe 1991). An additional 400 acres were purchased from the Damons in 1911. In 1908, the Navy dredged Pearl Harbor channel, which was blocked by a shallow sand bar that restricted earlier development efforts (Watanabe 1991). Much of the fill from this and later dredging efforts was used to fill in low-lying lands. Five separate coastal defense batteries were built including Battery Selfridge and Battery Hawkins. The Fort Kamehameha post housed Hawai‘i’s first aviation unit in 1917-1918. The population of the base remained about 1,800 until World War II (Watanabe 1991).

The substantial fill activities and airport construction, especially those dating to 1942-1943, are readily apparent in a comparison of the 1933 (see Figure 16) and 1943 (see Figure 19) maps. Fill activities had expanded the shoreline over 500 m southeast from the Honolulu International Airport Station. The infilled lands in the vicinity of the project corridor were rapidly developed with roads and elongated warehouse-like buildings.

Nearly the entire eastern-most kilometer of the Airport Section 3 corridor lies on lands that were infilled as part of a large reclamation project dating circa 1942-1943. In addition, the 1953 U.S. Army Mapping Service Topographic map of Aiea quadrangle (see Figure 20), shows further urban and light industrial development in the corridor vicinity largely associated with the expansion of Honolulu International Airport and Hickam AFB. Following statehood, the lands of Moanalua were greatly developed for residential and light industrial uses. By 1978 (Figure 24), the development of the Airport Section 3 corridor vicinity appeared much as it does today.

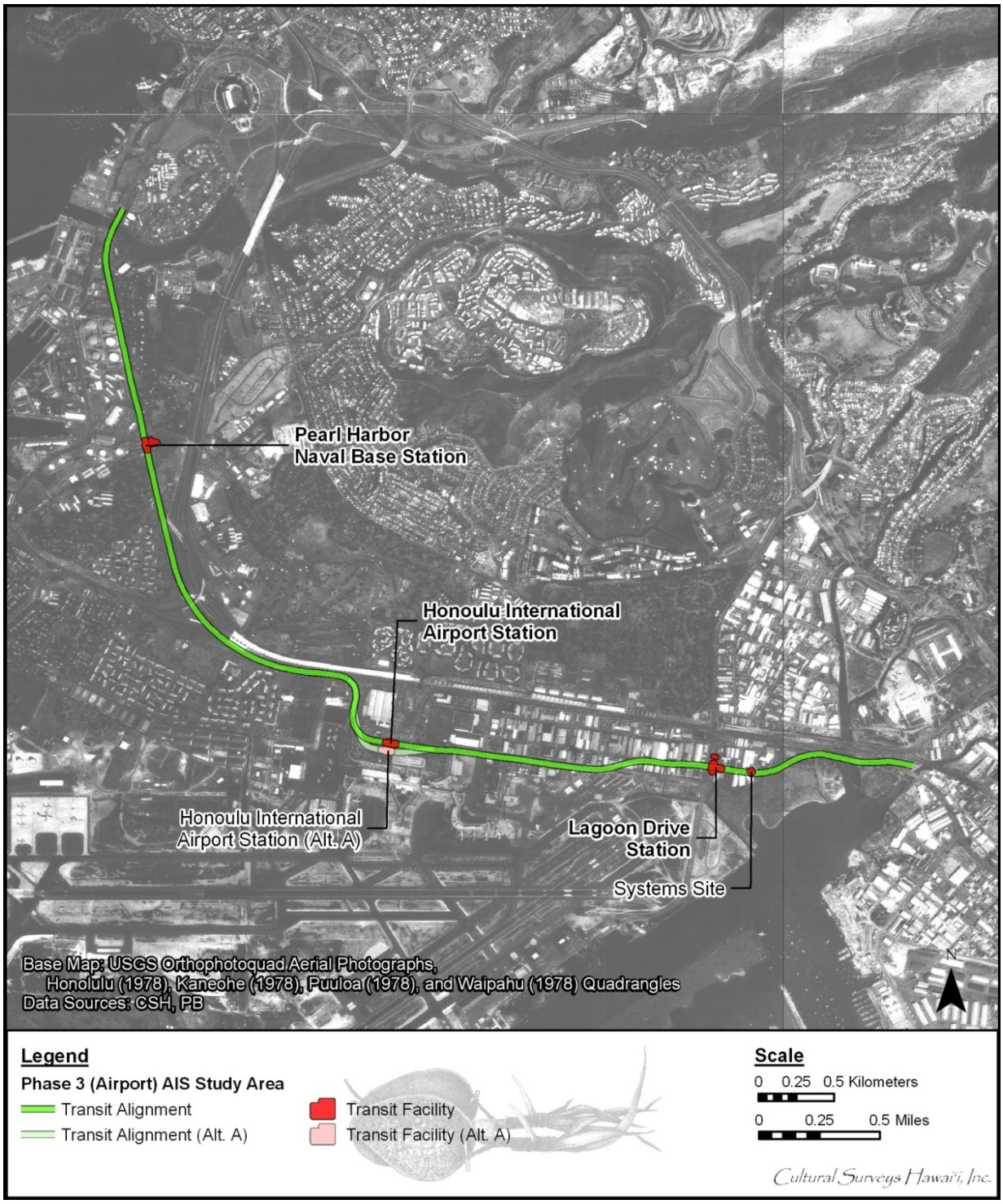

Figure 24. Overlay of Airport Section 3 study area on 1978 U.S. Geological Survey orthophotograph showing the Pearl Harbor Naval Base Station and Honolulu International Airport area